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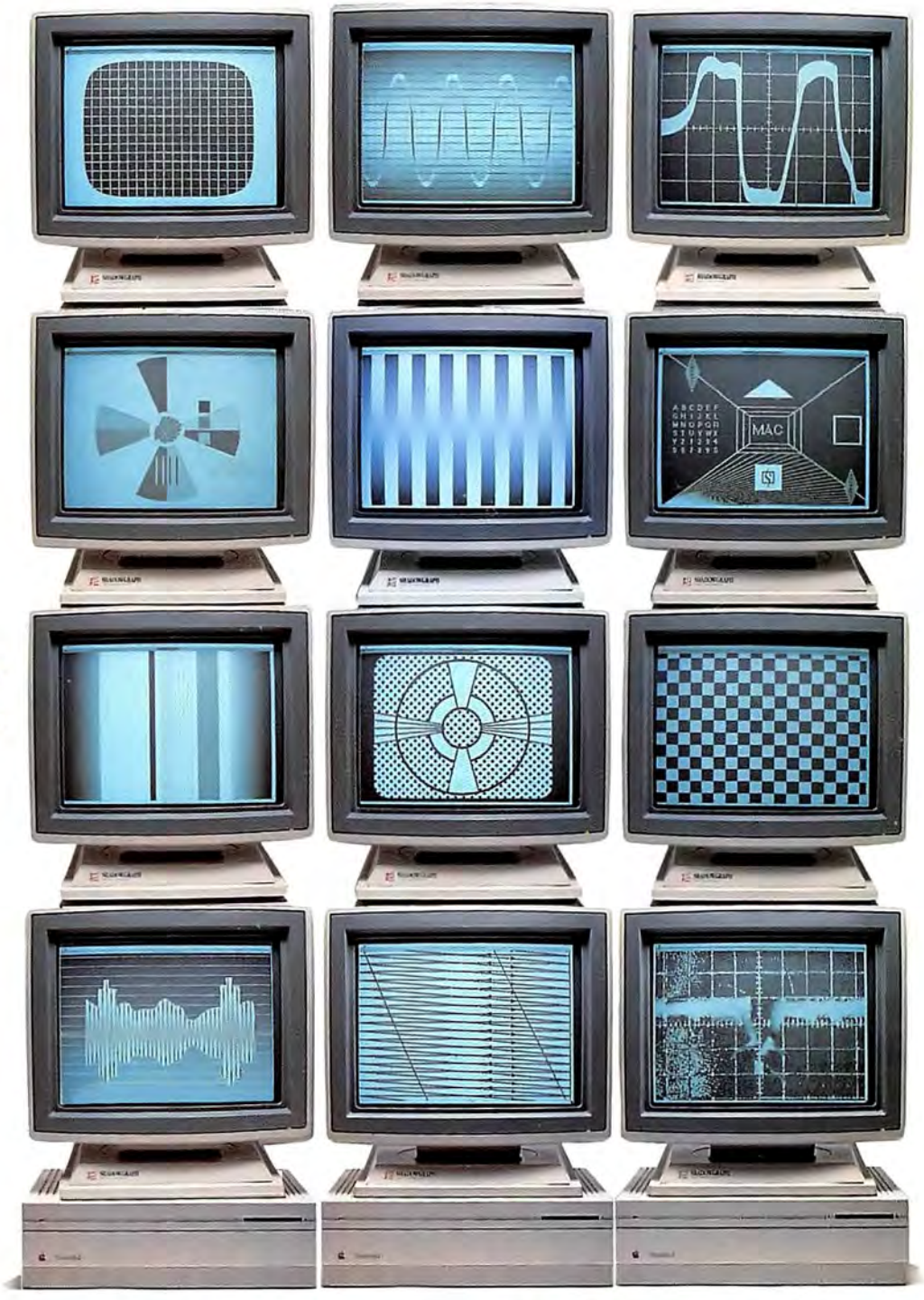
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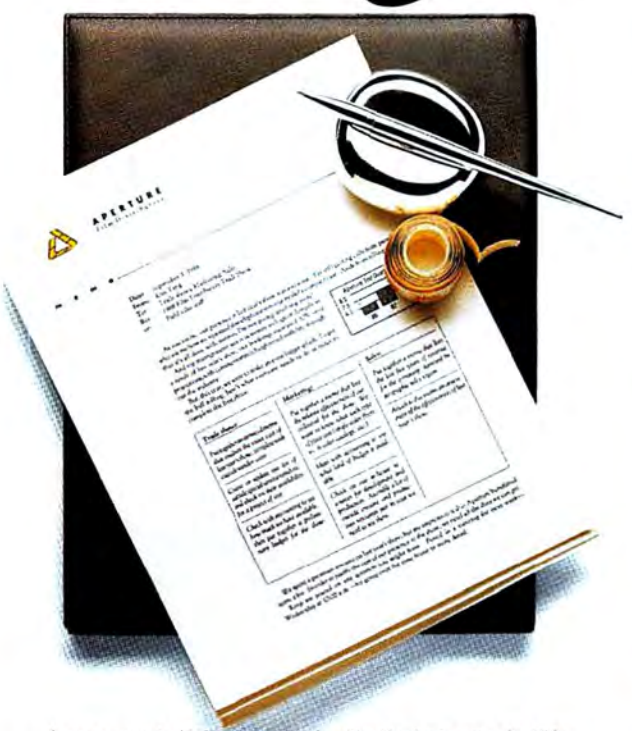
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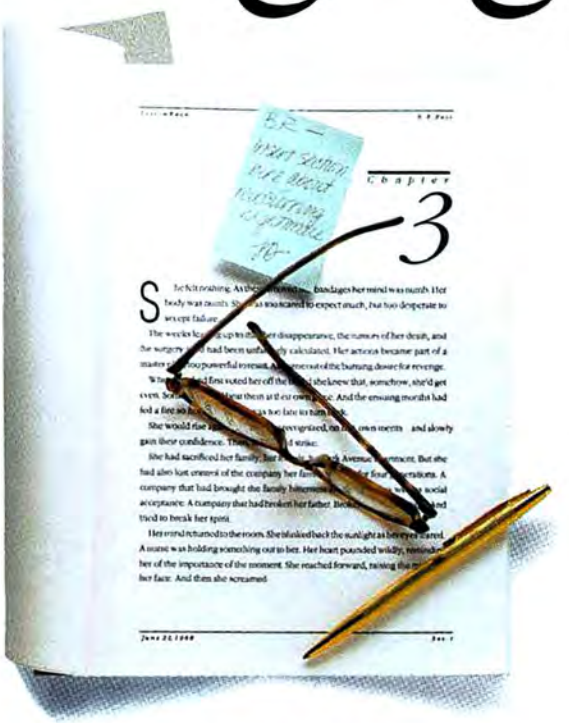
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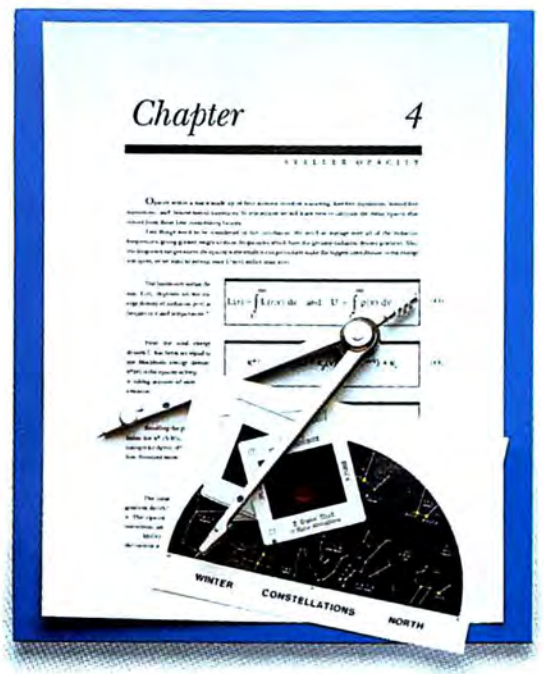
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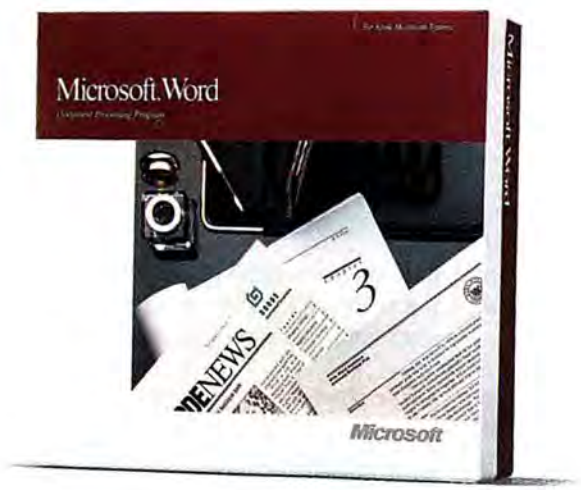


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MacUser

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BY SALVATORE PARASCANDOLO
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Power Tools

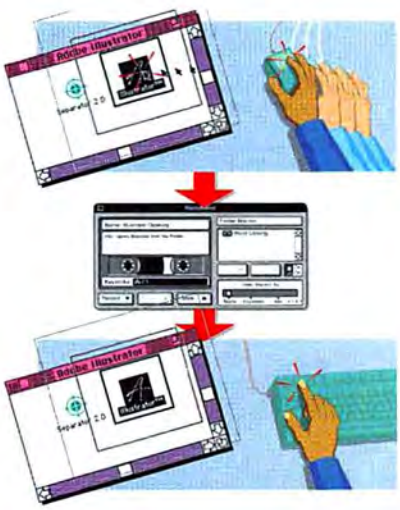
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AND KRISTI COALE

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MacUser Labs

Gray-Scale Monitors



MacUSER LABS

Grading the Grays
BY OWEN W. LINZMAYER AND THE MACUSER LABS STAFF
Tired of a black-and-white world but not yet ready to commit to color? Gray-scale monitors deliver 256 shades of gray for thousands of dollars less than their color counterparts. MacUser Labs screen-tested 11 gray-scale display systems, from Apple's tiny High-Resolution Monochrome Monitor to E-Machines' jumbo Big Picture. **182**

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MacUser (ISSN 0884-0997) is published monthly by Ziff-Davis Publishing Co., a division of Ziff Communications Co., One Park Ave., New York, NY 10016. Editorial Offices: 950 Tower Lane, 18th Floor, Foster City, CA 94404. Telephone: (415) 378-5600. U.S. subscription rates are $27 for 12 issues, $45 for 24 issues, and $62 for 36 issues. Additional postage for Canada: add $18 per year to the U.S. rates for surface mail. Single-copy price is $2.95 (Canada $3.95).

POSTMASTER: Send address changes to *MacUser*, P.O. Box 56986, Boulder, CO 80321-6986. Second-class postage paid at New York, NY 10016, and at additional mailing offices.

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Although we can't offer any telephone assistance, *MacUser* welcomes your technical questions. If you've got a Mac question or problem, send it to Chris Espinosa, The Help Folder, c/o *MacUser*, 950 Tower Lane, 18th Floor, Foster City, CA 94404. Chris works for Apple, and if he can't give you an answer himself, he'll find someone who can. Because of the volume of mail we receive, we can't answer all of your questions, so we also recommend that you take advantage of your local user groups. You can find the one nearest you by calling Apple toll-free at (800) 538-9696, ext. 500.

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We love to get tips and hints (on a disk, please) from our readers. Any tips should be sent to Tip Sheet, c/o *MacUser*, 950 Tower Lane, 18th Floor, Foster City, CA 94404. We can't print every tip, but we try our best to pick the most interesting and representative ones for publication. We'd also like to hear from any programmers who are interested in contributing to our utilities disk series or labs benchmark disk series. If interested, contact Michele Stokol at the same address.

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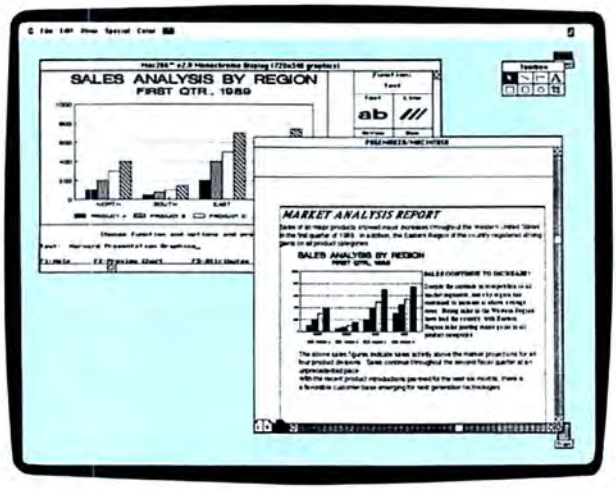
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About MacUser...

Choices, Chaos, and Challenges

Who can forget dragging a mouse in MacPaint for the first time and painting a spray of pixels across the screen? When the Mac arrived in 1984, you could drag any mouse you wanted — as long as it was Apple's. Life was simple, and the choices were few. Today, Mac users have a fantastic and bewildering array of alternative pointing devices to choose from. We tracked down every conceivable way of getting what's in your head onto your screen. After hours of touching, clicking, rolling, nodding, stroking, and puffing, we've summarized the results in "Building a Better Mouse." Check it out if you've ever wondered whether there isn't a better way to move a cursor.



PHOTOGRAPHY: PETER ALAN GOULD

Michael Swaine's monthly Macintosh System tips can really pay off — by boosting your productivity and (more important) by giving you a shot at the official Beat the System T-shirt.

MacPaint is still around too (or is that II?), but it's been surpassed by a host of 8-bit–color competitors with more features than the Space Shuttle. Salvatore Parascandolo, senior staff writer, sorted through them all in "Digital Palettes" to determine which programs we'll remember five years down the road from *now* and which will fade into obscurity.

Speaking of obscurity, remember the Puzzle desk accessory? It used to be the most challenging thing about using a Mac. Today, users get plenty of challenges from the endless options in system software. With each new System release, the power to personalize your Mac grows — but only if you know how to find your way. That's why we've introduced our new Power Tools section, which includes Michael Swaine's tips on how to "Beat the System."

This month Mike explains how to take advantage of MacroMaker, a nifty utility for automating keystroke sequences. It now comes free with every Mac, but it's used by surprisingly few people. Veteran micro enthusiasts will remember Mike from the pages of everything from *InfoWorld* to *Dr. Dobb's Journal*, which he edited for four years. (We've heard rumors that you'll find his picture in the dictionary under *power user*.) And Mike's got something better than a Puzzle DA: It's a puzzler. Each month he poses a conundrum, the solution of which can help you understand how to make your System run just a little bit more the way *you* want it to.

Even though the range of options will continue to grow, the Mac doesn't have to become harder to use. We hope you'll find that Power Tools and the rest of *MacUser* provide solutions that keep the Mac elegant — and easy.

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Richard L. Young of Brunswick, Georgia, asks for more information on low-priced and public-domain applications. "It would appear that most of your readers are not only power users but also millionaires," he writes. Check out Bobker's Dozen, our new monthly roundup of 13 lesser-known shareware and commercial utilities and other tools to help you work smarter.

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Letters to the Editor, c/o *MacUser*
950 Tower Lane
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Foster City, CA 94404

All letters become the property of *MacUser*, and we reserve the right to edit any letters we print.

COMPILED BY JON ZILBER

Software: Smart and Sassy

Rather than all the whizbang features suggested in Paul Somerson's July '89 editorial ("Software to Watch Over Me"), I'd like to see more attention paid to small details — the ones that get lost in so many product designs. I read the column while going through an agonizingly slow, user-unfriendly word-processing task, and I kept wishing for a few small features that would remove the hassle and drudgery that goes with changing one's mind or making corrections. For example, how about a "smart" top of page? If you have line spaces between paragraphs and a page breaks so that the last line of a paragraph is at the very bottom of a page, you end up with a blank line at the top of the next page. Paper Clip for the Commodore 64 had a feature that suppressed such blank lines; why don't all Mac word processors?

I don't need smart software — just a few smart designers.

Melvyn D. Magree
Plymouth, MN

For more thoughts on what Mac developers could learn from the Commodore 64, see Louise Kohl's column. — JZ

Paul Somerson's ardent exposition on behalf of "helpful" software failed to woo me; in fact, it left me a bit apprehensive. I don't think that software that spoon-feeds us and chides us into making the right decision is the answer. Without understanding *why* something is good, we grow soft and indolently press buttons, waiting for our prefabricated, predigested matter to appear so that we can finish one task and shuffle on to the next.

I will always use the best tools for the job. But I desperately long for a return to *craft*, a 21st-century renaissance that would urge us to explore and understand before setting out with our blueprints to re-create the world. This requires an active, agile, adaptable — and human — mind.

Mary Andrews
Columbia, MO

Paul Somerson explained that "the corporate bean counter" who always chooses DOS machines over Macs does so because "all he can see is six-figure savings and a fat year-end bonus that will pay for . . . his wife's liposuction." Perhaps he could have explained that "all she can see is six-figure savings and a year-end bonus that will pay for her husband's hair transplant."

J. Hunt
Oakland, CA

A Pox on Viruses

I have just spent five or six hours eradicating an nVIR virus. The creators of these viruses are very resourceful, like cockroaches. You think you have the problem under control, until it comes back to haunt you. Unfortunately, I managed to infect another person's system with some bad software. I learned that viruses are so rampant that this person had been infected before by commercially distributed software.

My wife describes the nagging worry in the back of our minds as similar to the state of mind after being raped. Those of us who have been haunted by the specter of undetected viruses, the software companies that have had to spend enormous amounts of money recalling infected software, the businesses that have been disabled by viruses — we all hope the virus perpetrators spend a long time in a small room with bars and without a computer.

Micheal Kenyon
Tucson, AZ

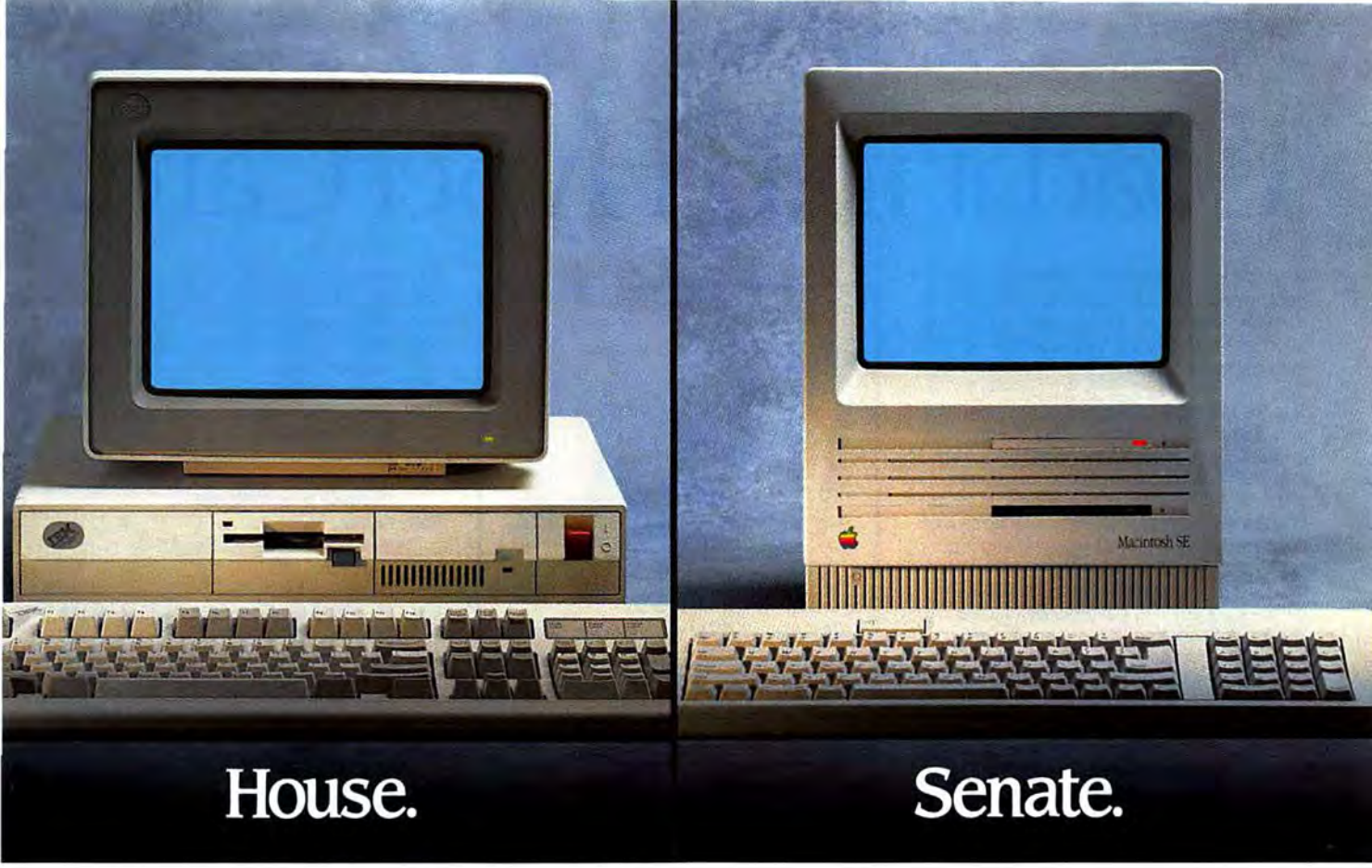
Words on Processors

I was pleased to see a review of Nisus, my favorite word processor, in the July '89 issue. In technical writing, the author does not start with a blank sheet but rather works with many existing documents to build a new one. Nisus' tiled windows, split windows, sync scrolling, and search and macro facilities make it successful as an authoring tool — not just a text-entry tool — in which it must be easy to navigate quickly and effortlessly through multiple documents.

Marceli Wein
Ottawa

Microsoft Word 4.0 (see "The Latest Word," July '89) is a great program. The new features are useful when you're running Word 4.0. But when does it *run?*

It didn't run in October '88 when the



We found a measure they could both agree on.

Up on the hill it looked like another split along party lines. Both Macintosh and PC users fought for access to the same information. Until a TOPS network brought them together in bipartisan agreement, that is.

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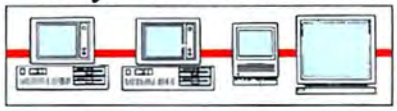
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5072 World-Class LaserType Vol. 4 42.
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3964 WetPaint Classic Clip-Art *(1 & 2)* ... 42.
3965 WetPaint For Publishing *(3 & 4)* 42.
3966 WetPaint Animal Kingdom *(5 & 6)* .. 42.
3967 WetPaint Special Occasions *(7 & 8)* . 42.
3968 WetPaint Printer's Helper *(9 & 10)* .. 42.
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4816 The Collector's Edition II 139.
5001 StreamLine 1.0. 229.
5605 True Form 1.0 229.
5606 True Form Runtime 175.
1137 Adobe Illustrator '88 1.6 289.
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5249 94 Linoscript. 95.
5250 95 VAG Rounded 125.
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5672 99 New Aster 239.
5671 100 Adobe Garamond 179.
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5668 103 Franklin Gothic No. 2 95.
5667 104 Utopia 179.
5666 105 Utopia Expert Collection. 125.
5665 106 ITC Berkeley Oldstyle 239.

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1331 PageMaker 3.01 389.

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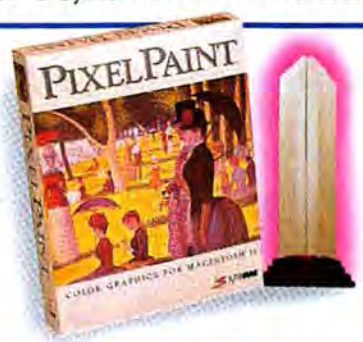
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1579 12 Sans Serif Extra Bold 46.
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1582 15 Micro Extended 46.
1583 16 Galileo Roman 46.
1584 17 Campanile-Giotto. 46.
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4836 Headline Pack *(Vol. 10-12)*. 129.
4837 Modern Pack *(Vol. 7, 14-18)*. 189.
4834 Distinctive Pack *(Vol. 8, 19-22)*. . . . 189.
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3532 Certificate Library 18.
4497 Top Honors 1.01 59.
4500 Springboard Publisher 1.0 109.

★T/Maker ... 30 day MBG

3635 EPS Illustrations 74.
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4968 HyperBible *(New International)* 1.0 179.

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1512 Turbo Pascal Tutor 1.0. 46.

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5199 HyperTools #2 1.03 52.
5609 XCAL 1.0 79.

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5255 Retrospect 1.0 155.

Dubl-Click Software

1824 Calculator Construction Set 1.04 . . . 35.

Electronic Arts

1843 Disk Tools Plus 1.01 *(Batteries Incl.)* . 31.

★Fifth Generation ... 60 day MBG

4287 PYRO! 3.3 *(screen saver)* 15.
3954 PowerStation 2.5 35.
3955 Suitcase II 1.2.2 45.
5178 FastBack II 1.0 108.

★HJC Software ... 30 day MBG

4803 Virex 2.0 59.

ICOM Simulations

4084 On Cue 1.3 35.

Ideaform

2419 DiskQuick 2.10 27.
2420 MacLabeler Plus 3.0 42.

★Kent Marsh Ltd. ... 30 day MBG

5457 QuickLock 1.0 57.
2591 The NightWatch 1.03 87.
2592 MacSafe 1.08C 87.

★Loop Software ... 30 day MBG

5442 PictureBook 40.

★Lundeen & Assoc. ... 60 day MBG

2683 WorksPlus Command 2.0 57.

MEDIAGENIC

4591 Open It! 1.0 49.

★Microlytics ... 60 day MBG

2732 GOfer 2.0 47.

★Microseeds Pub. ... 60 day MBG

4848 INITPicker 1.0 27.
4210 Screen Gems 1.0 42.
2913 Redux 1.5 52.

Olduvai Software

4503 MultiClip 1.01 51.



Digitalk ... 60 day MBG
SmallTalk/V Mac 1.1–The original object-oriented development environment. Extensive manual and tutorial. Easily integrates with other languages. Complete toolbox access. MultiFinder friendly. $129.

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Word 4.0–1989 MacWorld World-Class Award for *Word Processing*. Features complete WYSIWYG editing and automatic repagination. Over 65% of users chose Word. $249.

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3175 HFS Backup 3.0 54.
★Solutions Int'l. ... 60 day MBG
3448 SmartScrap & The Clipper 2.1 45.
3449 SuperGlue II 2.0 62.
★SuperMac Software ... 60 day MBG
3381 Sentinel 2.0 89.
3383 SuperSpool 5.0 59.
3382 SuperLaserSpool 2.0 89.
3378 SuperLaserSpool 5-Pack 2.0 295.
3377 DiskFit 1.5 59.
3379 Network DiskFit 1.5. 229.
★Symantec ... 30 day MBG
4729 Symantec Utilities for Mac II 63.
5176 Symantec Anti-virus for Mac 1.0 . . . 95.
★Williams & Macias ... 30 day MBG
3779 DiskFinder 29.
3783 myDiskLabeler w/Color 2.9.1I. 29.
3784 myDiskLabeler w/LaserWriter 2.9.1LI. 34.
3780 ImageWriter II Label Pack *(Qty. 216)* 16.
3781 LaserWriter Label Pack *(Qty. 216)* . . 20.
4976 Sticky Business 1.0.6 95.
★XTree ... 30 day MBG
5177 XTreeMac 1.0 52.

WORD PROCESSING

★A Lasting Impression ... 30 day MBG
5465 ResumExpert *(reqs. MS Word 3+)* . 49.
★Advanced Software ... 30 day MBG
5608 DocuComp. 89.
★Aegis Development ... 60 day MBG
1133 Word Tools 1.2 42.
Ashton-Tate
1324 FullWrite 1.0 259.
Claris
1129 MacWrite II 185.
★Deneba Software ... 30 day MBG
4700 BigThesaurus 1.0 59.
1767 Comment 2.0 59.
1768 Coach Professional 3.0C 115.
Electronic Arts
1543 Thunder II 1.0 *(Batteries Included)* . 52.
★Lundeen & Assoc. ... 60 day MBG
2684 WorksPlus Spell 2.0 46.
★Microlytics ... 60 day MBG
2733 Word Finder 2.0 36.
4870 Electronic WordFinder 220 $75.
★Microsoft ... 30 day MBG
2885 Write 1.0. 79.
4969 Word 4.0. 249.
★Niles & Associates ... 30 day MBG
5048 EndLink 1.0 58.
4602 EndNote 1.2.1 75.
★Paragon Concepts ... 30 day MBG
5683 Nisus 249.
★Preferred Publishers ... 30 day MBG
4781 Vantage 1.0 55.
★Sensible Software ... 30 day MBG
3375 Sensible Grammar 1.5.2. 53.
★Symantec ... 30 day MBG
3422 More II 2.01 249.
★Symmetry ... 30 day MBG
4504 Acta Advantage 1.0 65.
★T/Maker ... 30 day MBG
3639 WriteNow 2.0 109.
★WordPerfect ... 60 day MBG
3800 WordPerfect Mac 1.0.2 185.



Coda Music Software

Finale 1.2.6–1989 MacWorld World-Class Award for *Music*. Advanced technology brings affordability and flexibility to desktop music publishing. $479.

Working Software
3788 Findswell 2.0 36.
3792 Spellswell 2.0G. 45.
4693 QuickLetter 1.0. 73.

MUSIC & EDUCATION

★Ars Nova ... 60 day MBG
1215 Practica Musica 2.1 73.
★Bogas Productions ... 60 day MBG
1461 Studio Session 1.2 SE. 46.
4255 Super Studio Session 2.0 69.
1459 Heavy Metal Rock. 14.
1460 String Quartet 14.
1458 Country Disk. 14.
4832 Sound Effects 14.
Bright Star Technology
1402 Alphabet Blocks 1.0 30.
3961 Talking Tiles 1.0 27.
Broderbund Software
4314 Type! 1.0. 19.
1423 Jam Session 1.1 *(CP)* 30.
1422 Geometry 1.2 *(CP)* 59.
4067 Calculus 1.2 *(CP)* 59.
1426 Physics 1.0 *(CP)* 59.
Coda Music Systems
4367 MacDrums 1.01 *(CP)* 31.
4483 Perceive 1.0 $50.
5604 Finale 1.2.6. 479.
Davidson & Associates
1734 Math Blaster! 1.0 *(CP)*. 27.
4978 Speed Reader II 1.0 *(CP)* 36.
Electronic Arts
4619 Mavis Beacon Typing 1.2B *(CP)* . . . 33.
1846 Deluxe Music Construction Set 2.5 . 84.
First Byte
5294 Puzzle Storybook 1.0 *(ages 3-8)* . . . 27.
5293 Dinosaur Discovery Kit 1.0 *(ages 3-8)*27.
3941 SmoothTalker 2.1 33.
3935 Speller Bee 2.0. 33.
3936 KidTalk 2.0 33.
3940 First Shapes 2.0 33.
★Great Wave ... 30 day MBG
2277 TimeMasters 1.0. 22.
2276 KidsTime 1.2 26.
5642 KidsMath 1.1 26.
4334 NumberMaze 1.0 26.
2270 American Discovery 2.3 27.
2273 ConcertWare+ 4.0 38.
2271 ConcertWare+ MIDI 4.0 78.
Learning Company
2670 Reader Rabbit 2.1 *(CP)*. 31.
5453 Talking Math Rabbit 1.0. 31.
Mindscape
2748 The Perfect Score: SAT 1.0 32.
★Personal Training Sys. ... 60 day MBG
Excellerate Training Series
4946 E1 Beginning Spreadsheets 29.
5091 E2 Creating Business Graphs. 29.
4858 E3 Intermediate Spreadsheets 29.
5092 E4 Building Databases 29.
5093 E5 Beginning Macros. 29.
5094 E6 Linking Spreadsheets 29.
5095 E7 Advanced Spreadsheets 29.
5099 E8 Advanced Macros 29.
Excellerate 2.2 Training Series
5573 XL1 Beginning Spreadsheets 39.
5574 XL2 Intermediate Spreadsheets . . . 39.
5575 XL3 Advanced Spreadsheets 39.
5576 XL4 Creating Business Graphics. . . 39.
MacTeach Training Series
5263 B1 The Basics *(for 2 floppy drives)*. . 39.
5264 B2 The Basics *(for Plus or SE w/HD)* 39.
5265 B3 The Basics *(for Mac II w/HD)* . . . 39.
5266 B4 Beyond the Basics. 39.



HJC Software ... 30 day MBG

Virex 2.0–The first comprehensive solution to the threat of Mac computer viruses. Detects their presence, repairs infected files, and prevents reinfection. Now includes VirexGuard. . . $59.

that you can memorize.



Silicon Beach Software ... 60 day MBG
SuperPaint 2.0–1989 MacWorld World-Class Award for *Black and White Paint Programs*. Combines painting and drawing in a single program with an elegant interface. SuperPaint took 60% of the vote..... $128.

LearnWord Training Series
4947 W1 Beginning Level 39.
4854 W2 Intermediate Level 39.
5098 W3 Advanced Level 39.
5418 W4 Additional Features..... 39.
LearnPersuasion Training Series
5269 LP1 Beginning Persuasion 39.
5270 LP2 Intermediate Persuasion 39.
5271 LP3 Creating AutoTemplates..... 39.
5272 LP4 Creating Artwork 39.
HyperEasy Training Series
5194 H1 Using HyperCard 39.
5195 H2 Creating Cards & Stacks 39.
5267 H3 Basic Scripting 39.
5268 H4 Advanced Scripting..... 39.
PageTutor Traing Series
4852 P1 Beginning PageMaker..... 39.
4853 P2 Intermediate PageMaker 39.
5096 P3 Tips & Techniques 39.
5097 P4 Advanced Features 39.
MasterWorks Training Series
5196 M1 Database & Form Letters 39.
5197 M2 Advanced Databases 39.
5273 M3 Spreadsheets 39.
5274 M4 Word Processing 39.
Learn88 Training Series
5259 A1 Beginning Illustrator 39.
5260 A2 Intermediate Illustrator..... 39.
5261 A3 Creating Special Effects..... 39.
5262 A4 Precision Drawing Techniques.. 39.
Learn FileMaker Training Series
5278 FM1 Beginning FileMaker..... 39.
5279 FM2 Intermediate FileMaker 39.
5280 FM3 Advanced FileMaker..... 39.
5281 FM4 Tips & Techniques..... 39.

★Simon & Schuster ... 60 day MBG
3305 Typing Tutor IV 1.2 34.

★Spinnaker ... 30 day MBG
2329 SAT Score Improvement 1.0 *(CP)* .. 57.

★Springboard ... 30 day MBG
4493 Atlas Explorer *(CP)* $28.

★Think Educational ... 60 day MBG
3615 MacEdge II 1.0 *(CP)* 27.
3616 Mind Over Mac 1.4 *(CP)* 27.

★Unicorn ... 30 day MBG
3751 Animal Kingdom *(CP)* 27.
3756 Math Wizard *(CP)* 27.
3753 Fraction Action *(CP)* 27.
3755 MacRobots *(CP)* 27.
3754 Read-A-Rama *(CP)* 32.

ENTERTAINMENT

Access Software
4655 World Class Leader Board Golf.... 27.
Activision
4475 Quarterstaff *(CP)*..... 30.
4679 Universal Military Simulator..... 30.
4486 Manhole..... 30.
5127 Manhole *(CD ROM)* 35.
4490 Might & Magic *(CP)*..... 35.
4592 Zork Zero *(CP)* 35.
5517 Cosmic Osmo..... 42.
Addison-Wesley
4407 The Hobbit *(CP)* 24.
4474 Fellowship of the Ring *(CP)* 24.
Broderbund Software
4099 Shufflepuck Cafe *(CP)*..... 24.
4111 Moebius *(CP)* 24.
1421 Ancient Art of War *(CP)* 27.
4540 Ancient Art of War at Sea *(CP)*..... 27.
4229 Where/World Carmen Sandiego? *(CP)* 27.
5233 Where/USA Carmen Sandiego? *(CP)* 29.
4966 SimCity 1.1*(CP)* 29.
Bullseye
1544 Ferrari Grand Prix *(CP)* 32.
4074 P51 Mustang Flight Simulator *(CP)* . 32.

★Casady & Greene ... 60 day MBG
2268 Crystal Quest 2.2T 25.



Symantec ... 30 day MBG
More II 2.01–1989 MacWorld World-Class Award for *Outline Processing*. A complete planning and presentation solution. Commanding winner with 58% of total votes..... $249.

4119 Crystal Quest w/Critter Editor 2.2T. $41.

★Discovery Software ... 30 day MBG
4408 Arkanoid..... 26.

Electronic Arts
1850 Reach for the Stars 26.
1842 Chessmaster 2000 *(CP)* 28.
5554 Bard's Tale 32.



Preferred Publishers ... 30 day MBG
DAtabase 1.12–Full-featured desk accessory database for text, graphics and color images. Includes a unique converter and minifinder interface for merging and accessing frequently used files..... $72.

4064 Chuck Yeager Flight Simulator 32.
4588 Life & Death *(CP)* 32.
4945 The Hunt for Red October..... 32.
4981 Starfleet 1..... 36.
Epyx
2037 Sub Battle Simulator 29.
4660 Sub Battle Simulator for Mac II 29.
MicroProse
4697 Pirates! *(CP)* 35.

★Microsoft ... 30 day MBG
2868 Flight Simulator *(CP)*..... 33.
Miles Computing
5253 The Puzzle Gallery 27.
2765 Fool's Errand *(CP)* 32.
2767 Harrier Strike Mission II *(CP)* 32.
Mindscape
4083 Balance of Power 1990 *(CP)* 30.
3987 Colony *(CP)* 30.
2745 Deja Vu *(CP)*..... 30.
4596 Deja Vu II *(CP)* 30.
2743 Crossword Magic *(CP)* 30.
5429 Aussie Joker Poker *(CP)* 30.
2749 Shadowgate *(CP)* 30.
5252 Gauntlet *(CP)* 30.
2751 Uninvited *(CP)* 30.
2750 Siboot: Trust & Betrayal *(CP)* 30.
PCAI
3144 MacGolf 2.0 *(CP)* 34.
4320 MacGolf Classic *(CP)* 53.
4321 Lunar Rescue *(CP)*..... 34.
4517 Road Racer *(CP)*..... 39.
Sierra On-Line
4161 Mother Goose *(CP)*..... 19.

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Symantec Utilities for Mac (SUM) II–1989 MacWorld World-Class Award for *Disk and File Utilities*. Includes crashed disk and deleted file recovery, backup, optimization, and data security. $95.

3397 Leisure Suit Larry *(CP)* 23.
3394 King's Quest *(CP)* 29.
3395 King's Quest II *(CP)* 29.
3396 King's Quest III *(CP)* 29.
3398 Police Quest *(CP)* 29.
3399 Space Quest *(CP)* 29.
3400 Space Quest II *(CP)* 29.

★Silicon Beach ... 60 day MBG

3502 Beyond Dark Castle 32.
3501 Apache Strike 32.
3503 Dark Castle 32.

Sir-Tech

3347 Mac Wizardry *(CP)* 35.

★Softstream Int'l., Inc. ... 60 day MBG

4071 Mac•Man 23.
4072 The Solitaire DA 23.
4995 Cribbage Tutor 26.
4073 Colour Billiards 38.

★Spectrum Holobyte ... 30 day MBG

4175 Solitaire Royale *(for Mac SE)* 19.
4001 Solitaire Royale *(for Mac II)* 19.
3464 Tetris 20.
4472 Tetris *(color version)* 24.
3462 PT-109 26.
3460 GATO 26.
3459 Falcon 2.0 31.

★Spinnaker ... 30 day MBG

2328 Sargon IV *(CP)* 29.

★Springboard ... 30 day MBG

4988 Hidden Agenda 36.

★SubLogic ... 60 day MBG

4698 Jet *(CP)* 32.

NETWORKS & COMMUNICATIONS

★Abaton ... 30 day MBG

4589 InterFAX Modem 349.

★CE Software ... 60 day MBG

5636 In/Out *(5 user Pak)* 129.
5638 In/Out *(10 user Pak)* 189.
5174 QuickMail *(5 user Pak)* 175.
5173 QuickMail *(10 user Pak)* 259.

★CompuServe ... 60 day MBG

1676 CompuServe Information Service .. 24.
1673 CompuServe Navigator 2.1 45.
1674 Standard Service/Navigator Bundle 59.

Connect, Inc.

5445 MacNet 47.

★DataViz ... 60 day MBG

1823 MacLink Plus/PC 4.0 $139.
4842 MacLink Plus/Translators 4.0 115.

★Dove Computer ... 60 day MBG

4939 FastNet III 375.
4938 FastNet SE 375.
5624 FastNet SE30 375.
4937 FastNet SCSI 749.

★Dow Jones ... 30 day MBG

5295 News/Retrieval Membership Pack. 24.
1785 Desktop Express 1.03 95.

★Farallon Computing ... 30 day MBG

4208 Timbuktu 3.0 95.
4866 Timbuktu Remote 1.0.1 195.
4867 Timbuktu 30-Pack 2.0.1 1325.
2201 TrafficWatch 1.08 135.
2202 PhoneNET to LocalTalk Adapter 9.
5664 PhoneNET StarConnector 18.
2203 PhoneNET PLUS *(DIN-8)* 35.
2204 PhoneNET PLUS *(DB-9)* 35.
5251 PhoneNET CheckNET 65.
4869 PhoneNET Connector 10-Pack ... 215.
4868 PhoneNET Repeater 325.
2206 PhoneNET StarController 1095.



Farallon Computing ... 30 day MBG

Timbuktu 3.0–View and control other Macs across a network. New version allows for multiple security levels and passwords, as well as drop folders and file transfer capabilities. $95.

2205 Star Wiring Kit *(Punchdown)* 65.
5455 Star Wiring Kit *(Harmonica)* 65.

★Freesoft ... 60 day MBG

2219 Red Ryder 10.3 52.

Hayes

2300 Smartcom II 3.1 88.
2307 Smartmodem 2400 429.
5169 2400M *(internal w/Smartcom II)* .. 459.

Insignia Solutions

4089 SoftPC 1.3 249.

Intel Corporation

5119 2400 Baud External Modem 179.

★Lamir ... 30 day MBG

4984 Acknowledge 1.0 *special* 289.

★Microsoft ... 30 day MBG

2875 Microsoft Mail 1.37 (1-4 users) 195.
2872 Microsoft Mail 1.37 (5-10 users) ... 325.
2873 Microsoft Mail 1.37 (11-20 users) .. 489.
2874 Microsoft Mail 1.37 (21-32 users) .. 625.

★Nuvotech ... 60 day MBG

3000 TurboNet ST *(DIN-8)* 30.
3001 TurboNet ST *(DB-9)* 30.

★Practical Peripherals ... 30 day MBG

3100 1200 Baud External Modem 77.
3102 2400 Baud External Modem $179.
5285 PM 2400SA MNP Modem 209.
3089 Mac Communications Pack 1.5 .. 225.

★Shiva ... 30 day MBG

3444 NetSerial X232 279.
4347 NetBridge 349.
4942 TeleBridge 349.
3443 NetModem V2400 439.

★Software Ventures ... 30 day MBG

3454 MicroPhone 1.5 115.
3455 MicroPhone II 2.0 *(receive a free upgrade to 3.0)* 219.

★Solutions Int'l. ... 60 day MBG

4308 BackFAX *(reqs. Apple FAX modem)*. 125.

★Synergy ... 30 day MBG

3130 VersaTerm 4.0 89.
3131 VersaTerm-PRO 3.0 175.

★TOPS ... 30 day MBG

4188 TOPS Teleconnector *(DIN-8)* 29.
4189 TOPS Teleconnector *(DB-9)* 29.
3726 TOPS for DOS 2.1 115.
4598 TOPS FlashBox 125.
3725 TOPS Repeater 129.
3723 TOPS Mac 2.1 145.
3720 TOPS Flashcard 159.
3724 NetPrint 2.0 119.
4714 InBox Starter Kit 2.2 149.
4715 InBox Connection Mac 2.2 49.

★Traveling Software ... 60 day MBG

3729 LAP-LINK Mac 2.0 83.

INPUT/OUTPUT

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4476 OmniPage 2.0 559.
5607 OmniPage/Dove MSE5 Bundle .. 1779.

★Cutting Edge ... 30 day MBG

3988 CE 105ADB Keyboard w/QuicKeys . 135.

★Datadesk ... 30 day MBG

1818 HyperDialer 24.
1819 MAC-101 Keyboard *(beige)* 139.
1820 MAC-101 Keyboard *(platinum)* ... 139.
1821 MAC-101 Keyboard *(ADB)* 139.
Foreign keyboards available call

★Kensington ... 30 day MBG

2576 Turbo Mouse for Mac Plus 3.0 109.
2547 Turbo Mouse ADB 3.0 109.



Microsoft ... 30 day MBG

Excel 2.2–1989 MacWorld World-Class Award for *Spreadsheets*. New version utilizes up to 8 megs of memory and is 40% faster. Received 85% of total votes! $249.



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4813 Round Lables 3 1/3" (Qty. 150) $7.
4812 Laser Labels 1/2" x 1 3/4" *(Qty. 2000)* . 7.
4807 Laser Labels 1" x 2 5/8" *(Qty. 3000)* . 24.
4808 Laser Labels 1 1/2" x 4" *(Qty. 1400)* . 24.
4809 Laser Labels 2" x 4" *(Qty. 1000)* . . . 24.
4810 Laser Labels 8 1/2" x 11" *(Qty. 100)* . 24.

★Basic Needs ... 60 day MBG

5635 Keyboard Flip 8.
5633 LaserWriter Printer Stand 29.
5634 Large Screen Monitor Stand 39.

★Computer Coverup ... 60 day MBG

1722 ImageWriter LQ Cover 8.
1723 ImageWriter II Cover 8.
1720 Mac Plus Cover 10.
1724 Mac SE Cover 10.
1725 Mac SE Ext. Keyboard Cover Set . . 10.
4657 LaserWriter II Cover 10.

★Goldstein & Blair ... 30 day MBG

2267 *The Macintosh Bible* (2nd Edition) . . 20.

★I/O Design ... 30 day MBG

2379 MacLuggage Imageware II 49.
2376 MacLuggage Macinware Plus 64.
2381 MacLuggage Macinware SE 75.

Kalmar Designs

2531 Teakwood Roll-top Case *(holds 45 disks)* 14.
2532 Teakwood Roll-top Case *(holds 90 disks)* 21.
2533 Teakwood Roll-top Case *(holds 135 disks)* 31.

★Kensington ... 30 day MBG

MacConnection carries the entire line of Kensington's accessories. Partial listing below.

2577 Mouseway Pad 8.
2569 Mac Plus/SE w/System Saver Cover . 9.
2558 ImageWriter II Dust Cover 9.
2589 Universal Printer Stand 15.
4970 Modem/FAX Protector 10 15.
4971 Modem/FAX Protector 20 25.
4126 LaserWriter II Dust Cover 17.
2580 Mac II Stand 20.
2545 Universal Copy Stand 22.
2573 Tilt/Swivel *(platinum)* 22.
2578 Extra Long ADB Keyboard Cable . . 25.
4971 Modem/FAX Protector 20 25.
2579 Mac II Monitor Cable Extension Kit . 33.
4972 Power Tree 10 19.
4973 Power Tree 20 27.
4974 Power Tree 50 54.
2559 Apple Security Kit 34.



Freesoft ... 60 day MBG

Red Ryder 10.3–1989 MacWorld World-Class Award for *General Communications*. Supports MacBinary, Xmodem, Kermit and CompuServe Error Correcting protocols. $52.

2568 Maccessories SuperBase $34.
2585 Printer Muffler 80 43.
2586 Printer Muffler 80 Stand 24.
4070 System Saver SE 52.
2566 System Saver Mac *(platinum)* 64.
2567 System Saver Mac *(beige)* 64.
2546 A-B Box *(DIN-8)* 64.
2556 Maccessories Anti-Glare Filter SE . . 33.
5064 Apple Color Monitor Polarizing Filter 65.
5065 Full Page Display Polarizing Filter . . 65.
5066 Two Page Display Polarizing Filter . 135.
4941 Mac II Monitor Stand 65.
4643 Mac II Stand and Cable Kit 65.
2561 MasterPiece Mac II 105.
5229 PowerBacker 330 269.
5577 PowerBacker 450 339.
5578 PowerBacker 520 399.
5230 PowerBacker 800 749.
5228 PowerBacker 1200 949.

★MacConnection ... 60 day MBG

4623 Solid Oak Disk Case, made by New England craftsmen *(holds 90 disks)* . . 29.

★Mobius Technologies ... 60 day MBG

4470 Fanny Mac QT 60.



Thunderware ... 30 day MBG

Thunderscan 5.0 with Power Port–1989 MacWorld World-Class Award for *Digitizer/Scanner*. This three time winner turns an ImageWriter into a high-resolution image scanner. $189.

★Moustrak ... 60 day MBG

Available in blue or gray.

2694 Moustrak Pad *(standard 7" x 9")* . . . 8.
2692 Moustrak Pad *(large 9" x 11")* 9.
2693 Moustrak Pad L/F *(9" x 11")* 10.

★NoRad ... 30 day MBG

5620 Shield for Mac Plus or SE *(*2524)* . . 99.
5622 Shield for Mac II *(*2523F)* 99.

Ribbons

Available in black, blue, brown, gold, green, orange, purple, red, silver and yellow.

3255 ImageWriter II Ribbon 4.
3261 ImageWriter II 4-Color Ribbon 9.
3270 ImageWriter II Rainbow Six Pack . . . 20.
3260 ImageWriter LQ Black Ribbon 17.
4011 ImageWriter LQ 4-Color Ribbon . . . 20.

★Sopris Softworks ... 60 day MBG

4171 Mac SE Std. Keyboard Cover *(navy)* . . 15.
4019 Mac SE & Ext. Keyboard Cover *(navy)* . 15.
4016 Mac Plus Cover *(navy)* 15.
4017 ImageWriter II Cover *(navy)* 11.
4168 ImageWriter LQ Cover *(navy)* 13.
4018 LaserWriter II Series Cover *(navy)* . . 17.



Targus ... 30 day MBG

Mac SE & Ext. Keyboard Case–Made of a dust & water-resistant material as strong as Cordura but smoother so it won't wear out clothes. Closed cell foam protects against jolts. . . . $75.
ImageWriter II Carry Case 49.

4012 High Trek ImageWriter II carry case. 49.
4013 High Trek Mac Plus carry case 59.
4014 High Trek Mac SE & ext. kybd. case 69.
4861 SE Protection Pak *(std. keyboard)* . . 65.
4862 SE Protection Pak *(ext. keyboard)* . . 75.

★Targus ... 60 day MBG

3618 ImageWriter II Carry Case 49.
3617 Mac Plus/SE Carry Case 59.
4015 Mac SE & Ext. Kybd. Carry Case . . 75.

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Hawaii, Alaska and Outside Continental US: Call 603/446-7711 for information.

Two 3's, then five 4's:



Microsoft ... 30 day MBG

Works 2.0A–1989 MacWorld World-Class Award for *Integrated Packages*. Word processor, spreadsheet, database, and communications all in one. Runaway winner with 88% of total votes. $185.

Koala

2593 MacVision 2.0 219.

★Kraft Systems ... 60 day MBG

2600 3-Button QuickStick 39.
4082 3-Button QuickStick ADB 51.

Kurta

2604 IS ADB 8½" x 11" Tablet 255.
5161 IS ADB 12" x 12" Tablet 385.
5162 IS ADB 12" x 17" Tablet 625.
2605 Cordless 4 Button Cursor 65.

★Logitech ... 30 day MBG

5082 ScanMan Mac 349.

★LYNX Computer ... 30 day MBG

1211 LYNX Trackball 65.
1212 LYNX Trackball ADB 65.

★Microseeds Pub. ... 60 day MBG

4843 WristMac 1.0 149.
5018 WristMac Executive 1.0 199.

★Mobius Technologies ... 60 day MBG

4846 MultiScreen 315.

★Mouse Systems ... 30 day MBG

2808 A+ Mouse 63.
2809 A+ Mouse ADB 83.

★Nutmeg Systems ... 30 day MBG

4849 LCD Interface *(Kodak DataShow)* . 399.
2993 15" Monitor for Mac II*special* 799.
2992 15" Monitor for Mac Plus 999.
2994 15" Monitor for Mac SE 999.
4002 19" Monitor for Mac Plus 1349.
4096 19" Monitor for Mac SE 1349.
5680 19" Monitor for Mac SE30 1349.
4097 19" Monitor for Mac II 1349.

Olduvai Software

5138 Read-It! OCR Personal 2.0 99.
3034 Read-It! OCR 2.1 249.

★Orange Micro ... 30 day MBG

4488 Grappler Spooler 39.
3036 Grappler C/Mac/GS 2.0 79.
4076 Grappler LQ 1.5 103.
4487 Grappler LS 1.0 103.

★PTI/DataShield ... 30 day MBG

4845 MacDirector 109.

SoftStyle

3282 Printworks 3.5 *(Dot Matrix)* 43.
3281 Printworks 3.0 *(Daisywheel)* 56.
3283 Printworks 3.6 *(HP laser)* 85.

Summagraphics

4298 BitPad Plus ADB 325.

★Thunderware ... 30 day MBG

3648 ThunderScan 5.0 with PowerPort $189.
4994 LightningScan 409.
3645 Mac II Power Accessory 45.

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★Cutting Edge ... 30 day MBG

3989 800k External Disk Drive *(platinum)* 149.
5133 20 Meg Hard Drive 439.
3990 30+ Meg Hard Drive 499.
3991 45+ Meg Hard Drive 549.
5275 65+ Meg Hard Drive 629.
5276 80+ Meg Hard Drive 739.
5456 45 Meg Removable Drive 999.

★Dove Computer ... 60 day MBG

1802 Dove Tool Kit 15.
1801 SCSI Interface/Port 109.
5103 Mac II Power Pack *(includes Marathon 030 32MHz Accelerator, four 1 Meg SIMMs, and RamSnap)* 1799.
1807 MacSnap 524E 189.
1809 MacSnap 524S 239.
1811 MacSnap 548E 419.
1812 MacSnap 548S 479.
1800 MacSnap 2SE 319.
1797 MacSnap Plus 2 319.
1804 MacSnap 2S 329.
1805 MacSnap 4S 639.

ACCELERATOR BOARDS

1793 MaraThon 020 MSE1 429.
1794 MaraThon 020 MSE2 *(1 Meg)* 719.
1795 MaraThon 020 MSE3 *(math chip)* . . 599.
1796 MaraThon 020 MSE4 *(1 Meg/chip)* . 899.
5192 MaraThon 020 MSE5 *(4 Meg)* 1269.
5193 MaraThon 020 MSE6 *(4 Meg/chip)* 1449.
4663 MaraThon 030 Accelerator 32 MHz . 969.
5623 MaraThon Racer 149.

ACCELERATORS (020) W/ETHERNET

5391 FastNet LAN 1 1125.
5390 FastNet LAN 2 *(1 Meg)* 1499.
5389 FastNet LAN 3 *(math chip)* 1349.
5388 FastNet LAN 4 *(1 Meg/chip)* 1724.
5387 FastNet LAN 5 *(4 Meg)* 2175.
5386 FastNet LAN 6 *(4 Meg/chip)* 2399.



Kensington ... 30 day MBG

Trubo Mouse Plus and Turbo Mouse ADB–1989 MacWorld World-Class Award for *Input Devices*, for the second straight year. Features dual buttons for either hand as well as a removable ball for easy cleaning. each $109.

Epson

5132 40 Meg Raw Drive *(25ms)* $436.
5204 70 Meg Raw Drive *(25ms)* 586.

IOMEGA

5552 44M Ext. Single Bernoulli II Drive. 1399.
5553 44M Ext. Dual Bernoulli II Drive . . 2199.

★Kennect Tech. ... 30 day MBG

5631 Rapport 219.
5632 Drive 2.4 359.



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★PCPC ... 30 day MBG

3177 HD-WSI *(Apple HD-20 to SCSI)* . . . 199.
3189 MacBottom HD 45 SCSI call
4658 MacBottom HD 84 SCSI call

★SuperMac Tech. ... 30 day MBG

5452 Dataframe 20 599.
5447 Dataframe XP 30 749.
5448 Dataframe XP 60 1059.
5449 Dataframe XP 100 1419.

STORAGE MEDIA

Double Sided Disks

★Verbatim ... 30 day MBG

3772 3½" DS/DD Disks 15.
5035 3½" DS/DD 3 Pak*special* 39.
3297 **Sony** 3½" DS/DD Disks 15.
2792 **MAXELL** 3½" DS/DD Disks 16.

High Density Disks

★Verbatim ... 30 day MBG

3773 3½" HD Disks *(1.44 Meg)* 32.
3298 **Sony** 3½" HD Disks *(1.44 Meg)* . . . 32.
2793 **MAXELL** 3½" HD Disks *(1.44 Meg)* 32.

Tape Cartridges

3943 **3M** DC2000 25.
3944 **3M** DC600A 29.

ACCESSORIES

Apple Computer

1116 Black ImageWriter Ribbon 10.

★Avery ... 60 day MBG

4864 Disk Labels 3½" *(Qty. 250)* 13.
5392 Disk Labels—Laser 3½" *(Qty. 630)*. 29.
5403 Address Labels 7/16" x 4" *(Qty. 1000)* . . . 9.
4865 Address Labels 3½" x 15/16" *(Qty. 3750)* 15.
4811 Transparencies 8½" x 11" *(Qty. 50)* 22.

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MAIL

program was supposed to ship. Nor did it run in early '89 when it was again supposed to ship. But that was OK, because it was going to be bug-free when it shipped. Now I've received my disks, and it looks like I've been tricked into buying a program that runs in molasses.

Bob Bruce
Tampa, FL

"Word Wrestlers" (August '89) was one of the best comparative discussions of word processors I've seen. Most reviews are just "ain't it nice" whitewash and are almost worthless; your competitors are too full of lily-white glossiness. Keep up the good work.

David J. Swett
Santa Barbara, CA

Interleaf Intercession

In your April '89 review of Interleaf Publisher, you state that the Help function consists solely of 30 entries. In fact, the product has context-sensitive Help screens — more than 350 — for virtually every command in the program. You also state that the Printerleaf file format can be used to transfer files among different computers; Printerleaf is actually a print image used to drive a printer. Also, your statement that "formerly, documents had to be transferred in ASCII format" to let users



Dear Mr. Sculley . . .

. . . Lots of customers don't consider **MultiFinder to be a viable alternative to DAs** (which we asked you about in July '89). "MultiFinder is totally unusable on my 1-megabyte Mac; even on my boss's 2-megabyte Mac II, it's still almost worthless," says F. C. Foerster of Yucaipa, California. He adds that when he does upgrade to 2 megabytes, he'll use MultiFinder only "to show my non–Mac-using friends what the machine has the potential to do." And although MultiFinder operation (along with Startup and Control Panel documents) can provide much the same functionality as DAs, some users — such as Jack Fu of South San Francisco, California — offer further evidence that DAs are the cleanest way to access multiple applications: "Just take a look at how IBM and Microsoft are trying (although failing) to copy the DA interface."

. . . and users are skeptical about the **prospects of peaceful coexistence** between newer multimegabyte Macs running System 7.0 and older machines that will be stuck with System 6.0 (our September '89 question). Michael John Gregorek of Staten Island, New York, knows what Mac users want: "We just want a single computer that does it all, basically like the original Mac. Obviously the IIcx is the best, as it isn't seriously threatened with obsolescence." He suggests that Apple should use package-deal pricing to help customers make the right choice. Others see the choices as less clear-cut: "The Mac product line is in chaos," writes Hunt Blair of Providence, Rhode Island. "All these slightly differing machines, each new model sporting a snazzier System and other sexy improvements (the logic of which doesn't always flow backward to older models) — it's confusing as can be. I might buy another Mac — or an office full of them for my business — but I don't want to buy a new-generation Mac *just* to stay compatible. I can't afford to replace CPUs more often than *absolutely* necessary, and the new, more-powerful machines will have to work well in a network that includes older models."

Speak Up: Sounds like users could use some help sorting through their options. But, as Hunt Blair points out, "Apple refers all consumer questions about hardware, System software, and HyperCard back to the local dealer" (with whom Macintosh users are less than satisfied).

Are you happy with your Apple dealer — and with the division of responsibilities between Apple and its dealer network?

Send your thoughts to Dear Mr. Sculley, c/o *MacUser*, 950 Tower Lane, 18th Floor, Foster City, CA 94404.

More Rave Reviews for the #1 SQL Database.

PC WEEK

Oracle for Mac Solves DBMS Puzzle

SQL/HyperCard Combo Produces Sophisticated Applications

By Susan Janus

Database giant Oracle Corp., of Belmont, Calif., recently rounded out the list of platforms supported by the company's relational database-management system (DBMS) with the release of Oracle for Macintosh.

The new Mac DBMS teams the power of Oracle's Structured Query Language (SQL) with HyperCard's customizable and easy-to-use interface.

This combination allows Mac developers to create sophisticated applications that appear simple to users—a unique software-development opportunity unavailable on any other platform, including the PC, according to early corporate users we contacted.

In addition, users said, the network version of Oracle for the Mac allows the advantages of the HyperCard interface to serve as a front end to existing corporate relational databases residing on other platforms, such as mainframes and minicomputers.

Consequently, the Mac software has great potential for su[illegible]

oping database management systems to connect departmental Macs to larger systems. Jeff Menz, a systems analyst for a scientific R and D organization, is currently using Oracle for Macintosh to develop a system that will give the company's numerous Mac users access to an Oracle database running on a VAX. Using the networking version, Menz will link departmental AppleTalk networks to the VAX over a TCP/IP network.

Oracle Provides the Groundwork

The key benefit of Oracle's product is that "all the fundamental technical work—the protocols, the compatibility with the AppleTalk network—has been done by Oracle," Menz said. "I just have to build the HyperCard interface and do the database design work."

The result will be an Oracle relational-database application on the VAX with a HyperCard front end that Mac users feel comfortable with, he explained. Also, the company will have one logical relational database instead of numerous fragmented local databases. This allows tighter security, improved data integrity and better performance, he added.

Oracle for Macintosh

DBMS Brings New Power and Face to Mac Application Development

WHAT CORPORATE BUYERS LIKE

- Offers SQL capabilities
- Uses HyperCard to mask complexity of database applications
- Serves as front end to relational databases on other platforms
- Can link different Oracle database platforms with network version
- Provides good documentation and support

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MacUser, June 1989

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Mac Week, March 14, 1989

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MacGuide Magazine, June 1989

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[1]Stand alone version licensed for developers only. Requires Macintosh SE or II with 2 Megabytes of RAM, 5 Megabytes hard disk space, floppy disk drive, and HyperCard 1.2. Includes 30 day installation support, ORACLE database, Hyper*SQL (HyperCard Interface), SQL*Plus, OCI and Pro*C (Macintosh Programmer's Workshop is required for programming usage), System Stacks and Example Stacks. Full networking version is $999 and includes SQL*Net (for database communications), Async, 3270, DECNet, TCP/IP support, Alisa System's T-Snet DECnet protocol and drivers and Kinetic's TCPort TCP/IP protocol and driver. Accessing database software on other machines requires a separate protocol handler and gateway software for the other machine. Call for additional information.

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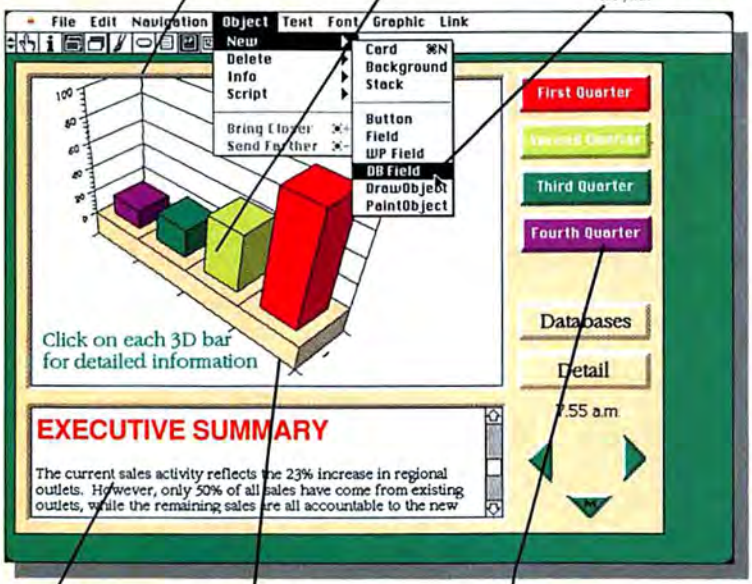
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of different computers share files is misleading; the ASCII referred to is Interleaf's ASCII markup language, which contains all the text, graphic, and formatting information.

Interleaf is not a desktop-publishing program per se; it is a business-publishing program emphasizing productivity. That's why Interleaf has not "jumped on the color bandwagon"; color documents are not a typical part of the broad range of paperwork in a corporate setting.

Malcolm Hobbs
PC and Macintosh Product Manager
Interleaf, Inc.
Cambridge, MA

The reference to 30 Help entries referred to Interleaf's main Help window, not the context-sensitive screens. Your other points are well taken. However, Interleaf's new pricing — down from $2,495 to $995 — suggests that the company may be trying to broaden its audience to include the more-established market for page-layout programs, such as PageMaker, Ready,Set,Go!, and QuarkXPress. — Gregory Wasson

Big Bad John

John Dvorak's column is the first thing I read in *MacUser*, but I can't understand his penchant for Japanese marketeering — and his desire for Apple to be like Sony (June and July '89). Why would Apple want to be like Sony? Maybe waterproof cassette players in Day-Glo–yellow plastic are a much bigger creative coup than I think they are.

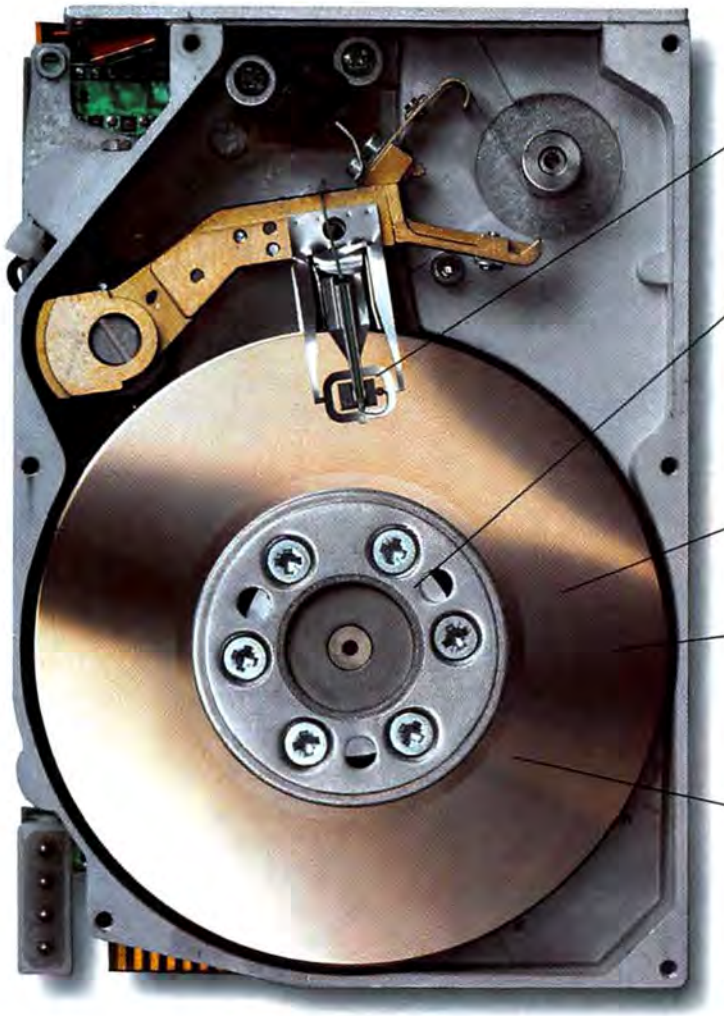
David Foster
Washington, DC

Clarification

Telecom Cross-Talk

In the August '89 feature "Custom Calling," three screen shots in the sidebar on page 97 were inadvertently switched. The shot under the heading Desktop Express was really MacNet, the shot labeled Access III was actually Desktop Express, and the shot called MacNet was Access III.

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Page 1



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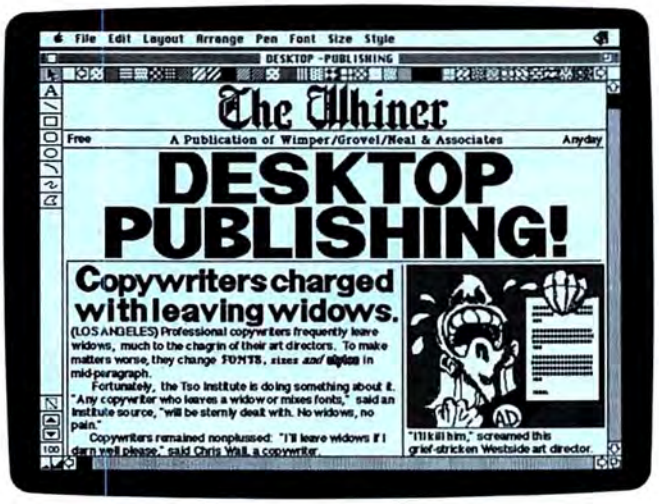
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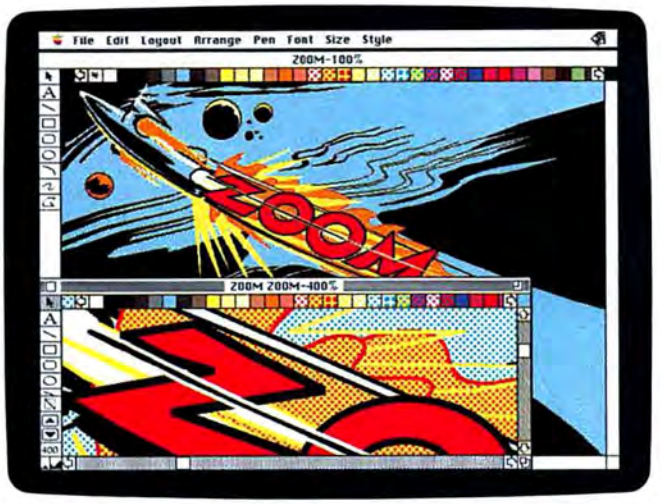
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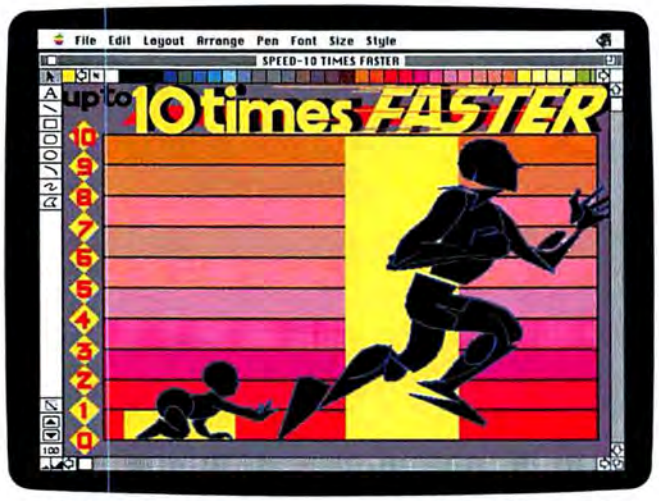
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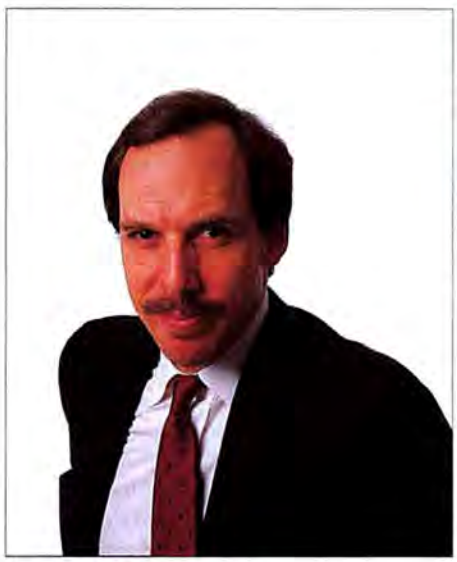


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PAUL SOMERSON



BY PAUL SOMERSON

The Envelope, Please

At *MacUser*, we invest considerable resources in taking the pulse of the industry. Editors spend as much as half their time on the road, speaking with product developers, user groups, retailers, and Mac purchasers of all shapes and sizes.

And when we're not out buttonholing industry experts, we're often attending product demos back in our Foster City office. Most days half a dozen or more vendors drop by to show off their latest handiwork, ask our advice about what products to develop next, and swap data about the state of the market.

In addition, we keep our on-premises research manager hopping with unending phone and mail studies, focus groups, interviews in the field, and other similar haruspication. And we rely heavily on analysis assembled by the large research staff at Ziff-Davis corporate headquarters in New York.

Part of our job is to spot trends so we can keep you totally informed about hot new products and emerging technologies. But we also need to stay abreast of market issues. Who's purchasing Macs (and who isn't)? What kinds of systems are people buying? What classes of peripherals and software are edging up or down in popularity?

And, of paramount importance: How effectively is Apple selling to large corporate sites? To small businesses? To engineers, designers, accountants, and other professionals? To serious business users of all stripes?

Over the past few years, the Mac has made its way into the mainstream of workaday computing. As a tool for business users, the Mac is unbeatable. Its intuitive interface, sensibly standardized functions, sublime graphics and sound abilities, and blissful ease of use make its power accessible to everyone. It now boasts a formidable arsenal of muscular business-oriented applications. And it's even *cheaper* to run than its DOS counterpart: According to a Gartner Group study, a Mac is typically 23 percent less expensive to own and operate over the five-year life cycle of the machine than a comparable DOS system.

(What's especially ironic is that apart from running an order of magnitude faster than the pokey 1981 PC, today's DOS-based systems haven't really progressed all that much. They're still as ornery as ever. For the most part, they remain grimly character-based, unintuitive, nonstandardized, and difficult to master. Give most business users the choice between clicking away at the Mac's elegant point-and-shoot Finder or grappling with the knotty intricacies of the DOS prompt, and there's really no contest. Using DOS is like wrestling with a large, eely opponent. It's no wonder that a maker of popular IBM clones hired the professional wrestler King Kong Bundy — a fearsome greased slab of beefcake with a shaved head — as its spokesman.)

MacUser's market investigations are not limited to the rigorous, scientific studies performed by our research department. Earlier in the year, with the cooperation of Apple, we launched a totally different kind of project that provided some genuinely eye-opening results.

This joint *MacUser*/Apple undertaking was in the form of a contest open to our readers. Apple supplied the grand prize. Our part involved running full-page ads headlined "Tell Us a Whopper and Win a Big Mac." The accompanying copy was brief:

"If you helped triumph over the forces that be, and persuaded your company to purchase Macintosh Personal Computers, we want to hear your story. You're what we call a 'Macintosh Champion.' And the fact that you directly influence purchasing could directly influence us to give you a fully-configured Macintosh II."

Participants were asked to fill in a questionnaire and write a brief account detailing their success. And the responses thundered in. By the box load.

The list of entrants read like a corporate Who's Who. The vast majority were from *Fortune* 500 companies, government agencies, and universities. And they represented the influential core of the market that vendors spend so much time trying to ferret out; an overwhelming number of these — 94 percent — stated that they specify, recommend, or select the brands of computer products their companies use.



As studies have demonstrated, it's difficult to identify corporate Mac buyers simply by job title. The single largest group of entrants was composed of company owners, presidents, partners, vice presidents, directors, general managers, controllers, and treasurers. But a substantial

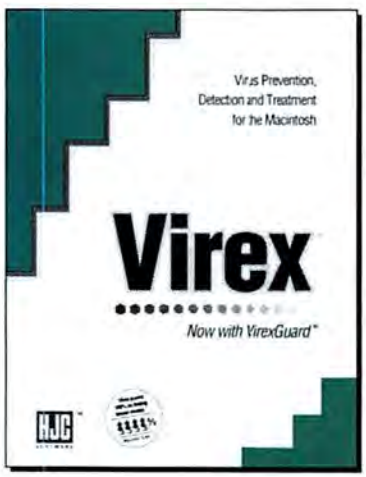
segment of contestants identified themselves as department-level supervisors and managers. And another significant chunk consisted of engineers and programming types.

Virtually all the entries shared a common theme: Gaining the initial toehold is often difficult, but once inside the corporate door, the Mac quickly proves itself to be an unparalleled productivity tool. The only hard part is breaking through the massive DOS barrier.

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SOMERSON

Here's a typical example, from Frank B. Davies at Hughes Aircraft, who personally waged a "Selling Management on the Mac" campaign: "I was finally allowed to enter into a controlled pilot program using 40 senior scientists and engineers. The test program was initiated in November, 1984 with 4 hours of training for each participant on nine applications. In April, 1985, the final report was published. The results: *a 22 percent increase in productivity!* The report became a best seller — over 500 copies were distributed worldwide. All contacts wanted to know 'How did you convince MIS directors?' Hughes is now one of the largest corporate accounts of Apple — over 8,000 Macs used by management, engineering, marketing, manufacturing, test, quality, publications, and C&DP."

Or this pair, truly from the blue (yonder) world:

First, the Air Force's Captain Mike Mansfield: "The battle to break with the MS-DOS mafia and go with Macintoshes was intense. Cost, compatibility with other Air Force computers, training (although less necessary than with MS-DOS systems, still an issue), and support were all issues that the Air Force needed convincing were justified by the increased productivity and ease of use afforded by the Mac."

Second, from A. Farrel Droke: "When the company was recently bidding on a large contract to make technical order corrections for the Air Force, the tech order group manager went to the bosses with my Mac claims I became John Henry, the Mac Drivin' man, to determine how fast technical orders could be revised [With the Mac] the bosses realized that for lower capital outlay and fewer employees, the company could win the bid with a higher profit. On my recommendation, the contract was bid with a network of over 70 Macs and accessories (about $575,000 for hardware). The MIS manager is now keeping a low profile."

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accounts, picking just one winner was extremely difficult. After extensive deliberation, we're awarding first place and the Mac II system to Cathy Vezzetti, a systems engineer at McDonnell Douglas, whose entry reads:

"I have personally chipped away at the great monolith IBM and scored a victory for Macintosh users everywhere. In 1986 the McDonnell Douglas Corporation was strongly committed to PCs for engineers. I suggested that a Mac Plus would be a perfect tool . . . for workstation development. An operator interface could be designed without writing any software code. The savings would be in the tens of thousands of dollars. I purchased eight Macintoshes, the first ever in our department. In 1987 we purchased 12 more Macs. The Macintosh became the foundation of our artwork and publications' tools. The Macs increased our efficiency in producing word processing, spreadsheets, and graphics. The top management still wasn't convinced Macintosh was the right road to take. I generated a report on the merits of the Mac II processing chip, operating system, and networking. My report formed the basis for the approval of $700,000 of Mac hardware and software purchases.

"We now have networked 80 Macs in our department. We produce color graphics, scanned images, customer reports, proposals, view charts, spreadsheets, and schedules, etc. on our Macs. Our 1989 department plans include linking a DEC VAX 6220 and a LPS-40 to Macintoshes, and purchasing 30 to 40 Macintosh IIx systems. For the good of our company and my own personal enjoyment I continue to find new ways to make use of the Macintosh as a power tool for engineers, management, and general support."

Our heartfelt congratulations to Cathy Vezzetti and to the many other deserving contestants. Although the contest is over, we're still eager to hear from readers with similar stories. If you've employed a particularly ingenious or effective strategy to significantly increase the number of Macs in your own business, drop us a line. We'll publish the best accounts in future issues.

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ROBERT R.
WIGGINS

Unwarranted Expenses



Warranties are not something most people really think about. When you buy a product and it doesn't work, you expect the store or the manufacturer to replace it. If it breaks or fails after only a brief period of use, you expect it to be repaired or replaced at little or no charge. But what if it breaks after three months? Six months? Two years? Is that what extended warranties are for? What if I bought it with my gold credit card? Don't I automatically get extended warranty coverage? These questions become important when the products in question are computer equipment and software that cost thousands of dollars to buy and hundreds of dollars to repair.

There are actually several kinds of warranties. The Uniform Commercial Code, some or all of which has been adopted by 49 states (Louisiana is the lone holdout), defines two kinds of warranties — express and implied. Express warranties are the guarantees made by the manufacturer or seller. For example, Apple expressly warrants its hardware against defects for 90 days. There are two major implied warranties, merchantability and fitness. Merchantability basically guarantees that the product is fit to be sold. This is generally a fairly low standard, and most products' express warranties are far more encompassing. In some states, the implied warranty of merchantability can be disclaimed but only if it's done before the sale (no surprise disclaimers inside the package). Fitness for a particular purpose applies only to the seller and only under certain circumstances. If you tell the seller the purpose for which you want a product and rely on the seller's expertise to select the product, then this warranty may be applicable. And that's warranties in a nutshell. As with all things relating to law, consult with your attorney for specific advice.

You've probably wondered what all the legalese and fine print inside most software packages are about, especially those things you are allegedly agreeing to when you open the disk packages. They're attempts by the software companies to partially or completely avoid giving you any kind of warranty. The first way they try to do this is to say they are "licensing" the software rather than selling it. This tactic serves two purposes. If they can successfully avoid making a "sale" under the legal definitions, they not only avoid the warranty issues but also avoid the "first-sale doctrine" of copyright law that gives you the right to resell, lend, or rent your copy of the software. (Imagine Ziff-Davis trying to legally prevent you from letting anyone else read your copy of *MacUser!*) Making the sale a "license" means the publisher still owns the software. It would still have to convince a court (and most buyers) that walking into a store and paying a one-time fee for a shrink-wrapped box isn't really buying something, though. The law may be an ass, as Dickens claimed, but I certainly hope it isn't *that* much of an ass.

After the licensing nonsense come the warranty disclaimers. Why are the manufacturers disclaiming sales warranties if the software isn't really sold? One common approach is to offer express warranties *on the disks* while disclaiming any and all warranties, including implied warranties (although some states don't allow this), on the software itself. You'll see phrases like "the software is provided 'as is' without warranty of any kind." Do they go to all this trouble to avoid giving your money back? No, the real fear here is that someone will sue them for consequential damages — monetary awards for such things as lost profits or data. Most software companies will cheerfully refund your money if you're unhappy (and complain enough), but they don't want to end up in court owing you millions of dollars. Understandable, but some of the ways they try to avoid liability are offensive to common sense.

What's all the legalese and fine print inside those software packages? They're attempts to avoid giving you any kind of warranty on your purchase.

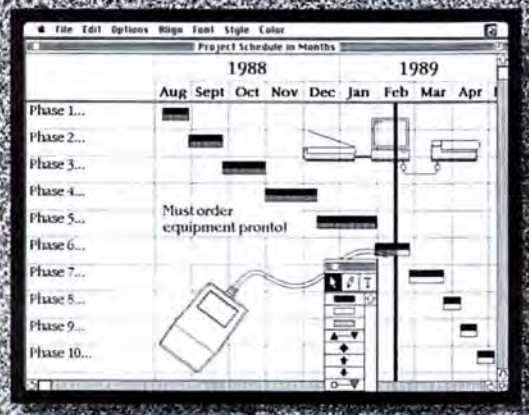
Recently, some more-enlightened companies have modified the restrictive wording of their warranty disclaimers. Both Microsoft and Ashton-Tate now offer the express warranty that their software will perform as documented in the manuals, or they will fix it or return your money. Both are to be congratulated. They still try to make the sale into a license, but the express warranty is a big step forward.

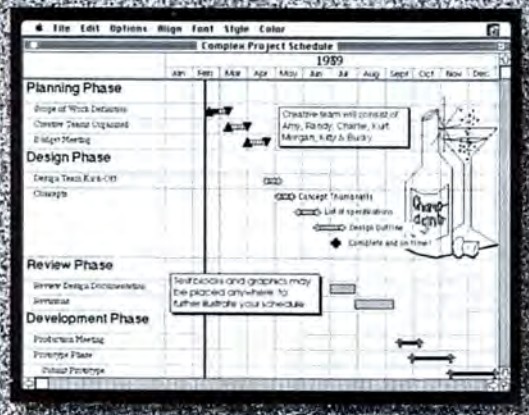
When it comes to hardware, the warranty picture is much clearer. Hardware companies don't go to the same great lengths

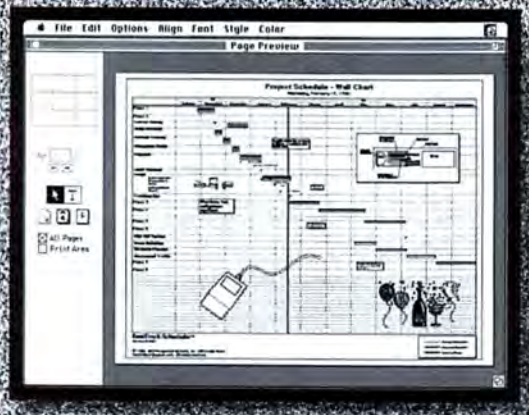


By Robert R. Wiggins

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as software companies to disclaim warranties. When you buy hardware, you get all the warranties you are legally entitled to, but you still need to watch out for the duration of the warranty. Most electronic products come with at least a one-year warranty, but some companies, such as Apple, warrant their products for only 90 days. When asked about this discrepancy, Apple spokespeople usually say that Apple has found that failures occurring after 90 days but before one year are so rare that extending the warranty period would not benefit consumers. Of course, your friendly Apple dealer will gladly let you buy additional warranty coverage called AppleCare.

The final category of warranty is the extended warranty, which is usually some sort of service contract extending the basic warranty (such as the ones that have become weapons in the credit-card wars). Basically, you buy a service contract that covers parts and labor just as the warranty does. You may have noticed that salespeople push service contracts much harder than products: Service contracts are a big-profit item. Apple is right that most electronic products fail in the first 90 days. So providers of extended warranties, including AppleCare, are betting that the items you purchase won't need service, and they usually win their bets. Of course, if you need service just once, the contract often pays for itself.

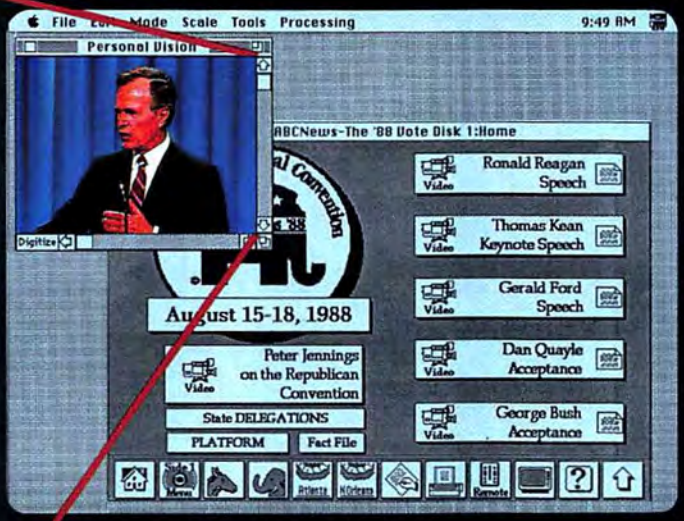
But extended warranties are such a good gamble that credit-card companies now offer them on products purchased with their cards. American Express made it an even safer gamble by requiring cardholders to register their purchases to avail themselves of the warranty. Since most people didn't bother to register, American Express didn't have to pay out very often. But when other credit-card companies began offering similar programs, American Express made its coverage automatic. If you bought any computer equipment with your American Express card before November 1988, be sure to register it before the original warranty expires, or you may find yourself another victim of unwarranted expenses.

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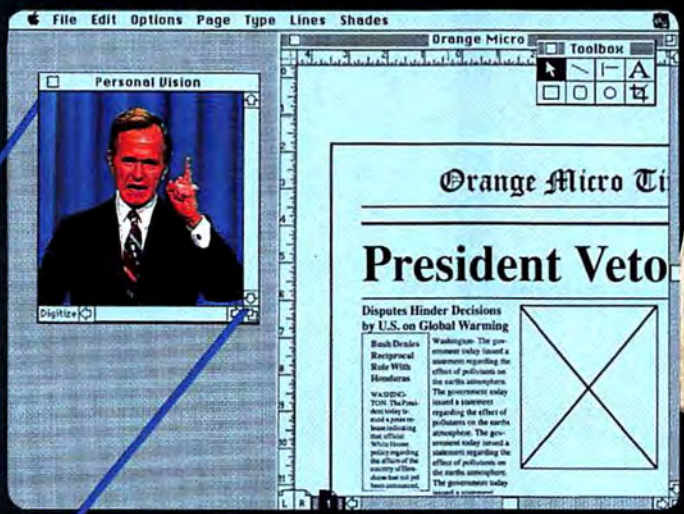
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JIM
SEYMOUR



Type Wars, Round II

A year ago, I wrote a column here called "A Descent Into Font Hell" (September '88), which recounted some of my adventures digging through PostScript fonts for the Macintosh. That column hit a nerve: We got *lots* of letters.

Since then, the Macintosh software-font market has changed a great deal. The code has been cracked, so to speak, on Adobe's encryption format for its downloadable fonts; other vendors are now pushing into what was once exclusively Adobe's preserve.

We hear lots of noise these days about whether competitors have succeeded in breaking into the second level of Adobe's labyrinth, the famous hints attached (invisibly to the user) to Adobe's PostScript software fonts. These hints are intended to help relatively low-resolution PostScript devices, such as LaserWriters, produce better-looking type in very small sizes. At least theoretically, if other vendors haven't yet cracked this layer in Adobe's proprietary encoding scheme, their fonts shouldn't look as good as Adobe's in those small sizes.

I find new interest — and a new *kind* of interest — among businesspeople in using software fonts with Macs and laser printers. Dealing with typefaces — even those built into the LaserWriter Plus and its clones — once seemed exotic, a bit beyond the ken and probably the needs of the average person.

Today I find that many businesspeople are becoming more interested in how their correspondence, reports, and proposals look. They neither want nor need the complexities of Ready,Set,Go!, QuarkXPress, or PageMaker; the page-layout capabilities of programs such as Microsoft Word 4.0 and WriteNow 2.0 are enough for them. Their use of graphics consists of dropping a chart or two into a report — and maybe occasionally something *really* exotic, such as using a two-column format. They don't put many line drawings of sneakers into their correspondence. In other words, they want clean layout and good-looking type.

After they've played with the fonts built into their LaserWriters and discovered how limiting those are, they decide they're ready for something more. They also care about their output and about giving themselves an edge over what every other Tom, Dick, and Harry with a Mac is doing; they'd like a printed look and feel that is not available to those using the standard stuff.

What they say they want is tips on picking and using software fonts. Clearly, given the evolution of the market over the past year and your strong response to my "Font Hell" column a year ago, it is time for a Second Look. This month and next, we'll prowl around in the often-confusing world of software fonts. Let's get the Adobe hints issue out of the way first.

This whole issue applies only to low-resolution (300-dpi) devices such as LaserWriters. If you're sending documents to a service bureau to be printed on its Linotronic or other PostScript-compatible imagesetter, you don't *need* the Adobe hints. The scalable character outlines of PostScript-described fonts come out fine in any reasonable size on these devices because they have enough resolution to handle the sharp curves and thin lines of tiny type.

But in this column, we're interested mainly in people who work with LaserWriters for their final output, so the Adobe hints might be important for you.

When a font downloads into a LaserWriter or other printer with a genuine Adobe-licensed controller, the controller inspects the incoming font and tags it as either Type 1 (genuine Adobe font with hints) or Type 3 (non–Adobe-encrypted font). If it's a Type 1 font, the controller decrypts the font and then extracts the hinting data — an alternative series of algorithms — and employs it in drawing small characters. Type 3 fonts work fine, but they eat up more printer memory, meaning that the printer can handle fewer fonts per document and takes longer to draw them.

Two recent events in the PostScript world have changed the software-fonts business.

Two recent events in the PostScript world have changed the landscape in the software-fonts business. First, Bitstream, Adobe's biggest competitor, announced that it had cracked



By Jim Seymour

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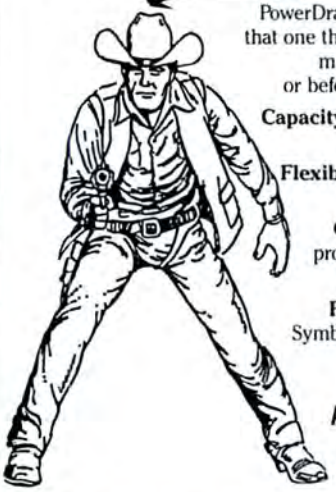
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Adobe's encryption system and was releasing a huge library of Mac software fonts that followed Adobe's encryption system. Bitstream hadn't yet, it said, broken the hinting process, but it hinted broadly that more on that would be coming shortly.

Second, Adobe, probably feeling threatened by Bitstream's actions, tried to outflank its rival by announcing that it would now license the whole enchilada: Adobe's font-encoding technology as well as the hinting routines.

Bitstream could simply become an Adobe licensee, but I'm betting against that; why should it if it has developed a method of achieving the same result without infringing on Adobe's patents? But other type vendors, such as Compugraphic (now a division of Agfa), Linotronic, and ITC, which have licensed only the right to sell their typefaces to Adobe, Bitstream, or both, are likely to buy Adobe licenses and enter the PostScript software-font market on their own.

How important are these Adobe hints? I've been running some tests, using both Adobe (hinted) and Bitstream (unhinted) fonts. I have a good eye for type and a lot of experience with fine-quality typesetting. The result is that I can't see a qualitative difference down through about 10-point type in the Bitstream hintless fonts. In 9-point and smaller sizes, I see a significant decline in the quality of the Bitstream fonts, although it is slight until you get down to 6-point and smaller sizes. And even Adobe's hinted fonts don't look so great when printed in such small sizes on a 300-dpi printer.

Those thresholds of pain at about 10- and 6-point type are important. If you rarely use sizes smaller than 10-point type — and few businesspeople do, except for the odd footnote or superscript character — hints just aren't a big issue for you. If you share my bias against 6-point-and-smaller type from 300-dpi devices — it's legible but unattractive — you can safely ignore the whole issue.

The moral: Don't worry too much about the "Hints Wars" and concentrate on selecting typefaces — and especially type *families* — that fit your needs.

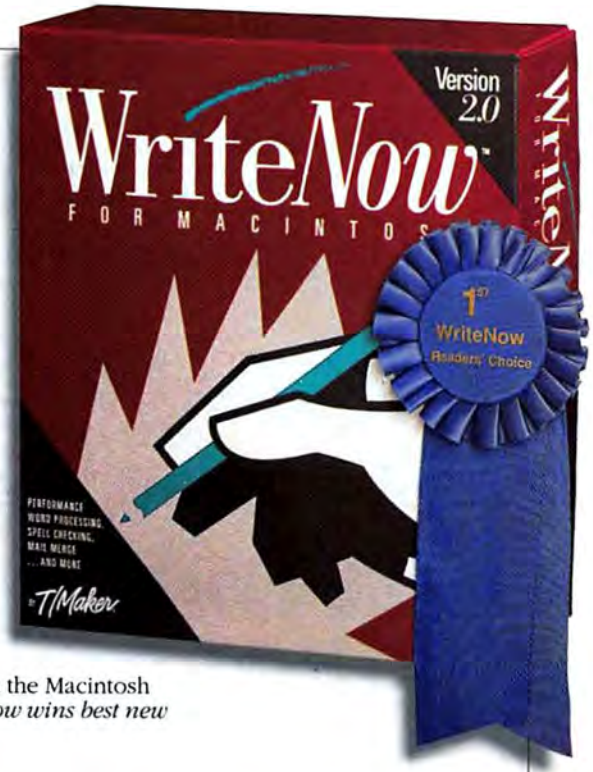
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MacWrite II	45.9 sec.	40.2 sec.	33.6 sec.	44.7 sec.	24.7 sec.
MS Works 2.0	1 min. 50.8 sec.	35.7 sec.	5 min. 13.4 sec.	2 min. 24.1 sec.	1 min. 14.5 sec.
MS Word 4.0	21.6 sec.	11.0 sec.	3 min. 55.1 sec.	39.4 sec.	25.8 sec.

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LOUISE KOHL

Bill of Writes

If spreadsheets were the application that sold personal computers to the world, it was word processing (along with a couple of very seductive games) that endeared these new machines to many of us. Sure, we Professional Writers balked at them at first. Using one wasn't the same; it lacked the element of manual labor that came with attacking a typewriter. We Professional Writers didn't want any soulless technology coming between us and our deathless prose.

OK, OK, I was writing computer-game reviews for 10- to 16-year-olds. But it got my name into print, rather than onto the cover sheet of — or footnoted to — some obscure philosophy paper that might get a reading public numbering well into the tens. And like all writers — with or without the capital letters — I have my idiosyncrasies. I have rarely, for example, gotten past the fifth page of any manuscript without suddenly being struck by a brilliant new lead. With a Macintosh, no problem; with a typewriter, major moral dilemma. Do I go back and rewrite, knowing that it entails retyping everything that follows? Or do I merely shrug in the general direction of my muse and decide that what I have already typed will do? (Muses treated in this offhand way have been known to take extended vacations.)



So what, you might well ask, is all this in aid of? Well, I'll tell you what — just after I go fix a couple of sentences up there at the top.

No matter what you do for a living, if you use a computer, your word-processing program is — if not your life's blood — one of the two or three most important and most frequently used applications you have. Software publishers recognize this; hence the new iterations of Microsoft Word and WriteNow, upgrades, and the new "hybrid" programs such as Nisus and FullWrite Professional. Word processors are big business: More than 280,000 units shipped in the Macintosh segment of that market in 1988. (For comparison's sake, more than 380,000 graphics-software units and about 140,000 spreadsheet packages shipped in the same period. And those are all the hard, quantitative facts you're going to get from me on this go-round.)

While Microsoft is a clear leader in the word-processing market (with a 56-percent share of the pie) as well as in the spreadsheet arena (84 percent), word processing is a more fluid and varied arena; there are more companies and products that can reasonably be designated as major players. Once you've set up an Excel spreadsheet and worked in it for a while, it would all but take an act of God to persuade you to try some new, even possibly improved product, especially one that had no direct Excel-import feature. But people who do a lot of any kind of writing are always on the lookout for new and improved word-processing packages. While there are just so many acceptable ways to keep track of numbers, there are many idiosyncratic and deeply personal ways of stringing words together. Word processors are a clear case of one man's meat being another man's poison; there is no word processor so obscure that it doesn't have ardent adherents and none so popular than it doesn't have detractors.

We don't want much, you understand; we just want the absolutely perfect word-processing program for what we have to do. So in the interest of spurring the industry on to greater heights of creativity and bringing closer the day of the bugless, feature-perfect word processor, here's what perfection means to me.

But before we slip into the Platonic realm of ideals, there's a classic dichotomy to be reckoned with: The Ideal versus The Get Real. In the Ideal area, what I really want is a DWIM (Do What I Mean) application — preferably one with a cultured Jeeves-like voice. When I write something such as the first sentence in this paragraph, it would say, "Pardon me, madam, but I do feel that the vacuous jargon of the professional philosopher is inappropriate in this context." It would clean up my quotations and references, even substituting more pointed examples; it would replace my common or garden-variety *mot* with *le mot juste*. It would, in short, not only read my mind, but it would read only the good parts. So much for science fiction.

We Professional Writers don't want much — we just want the perfect word-processing program.

I could *settle* for much less. My first word processor ran on the original Commodore 64 (presently residing in my closet and making up part of the vast installed Commodore user base). Compared with *any* Macintosh word processor, it was just barely better than a typewriter. It was to the original MacWrite what hand-copied manuscripts were to the Gutenberg press. It did, however, have at least one feature I'd like to see in a Mac word processor. What it had — and I realize the risk I'm running here — was three intelligently planned function keys: One took you immediately (and with-



By Louise Kohl

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out scrolling) to the top of the document, one took you to the bottom, and one went straight to the last active cursor position. If you've ever edited on-screen, you may appreciate these features.

In my present life, I use Word. This is not the result of endless comparison of products nor the culmination of a search for my personal favorite. It's the style sheets. *MacUser* is desktop-published in PageMaker, and those style sheets are amazingly handy (or so the production folks assure me). From my standpoint, however, the style sheets are also one of Word's drawbacks. I want *MacUser* style sheets resident in my *application*, not in individual documents. A nice toggle button allowing me to use our styles as my default would be much appreciated.

The ideal word processor would be an application "construction set" with customizable features.

And how about a modified Scrapbook that saves all your cuts in order without your having to paste them into a separate document? And any Mac application would be improved by some tinkering with the dialog boxes. At this stage of the game, it's a little primitive to be typing along and have to go to the mouse when you want one of the nonhighlighted options. Why no standard, single-letter keyboard commands? Surely that's not too much to ask?

These features will seem trivial to a lot of you — and probably many of the features in *your* perfect program would seem irrelevant to me. (And I look forward to your letting me know.) The answer to the never-ending search for the word-processing Grail is an application with a "construction set." It would have a solid "typing" base and a set of easy procedures to let users add whatever their little hearts desire. Permanently.

I'm holding my breath.



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Hey – I'm not a millionaire or a tycoon. My finances aren't the most complicated in the world. Even so, they took too much time. Plus, I didn't always have the information I needed for taxes, budgeting, and keeping better track of my cash flow.

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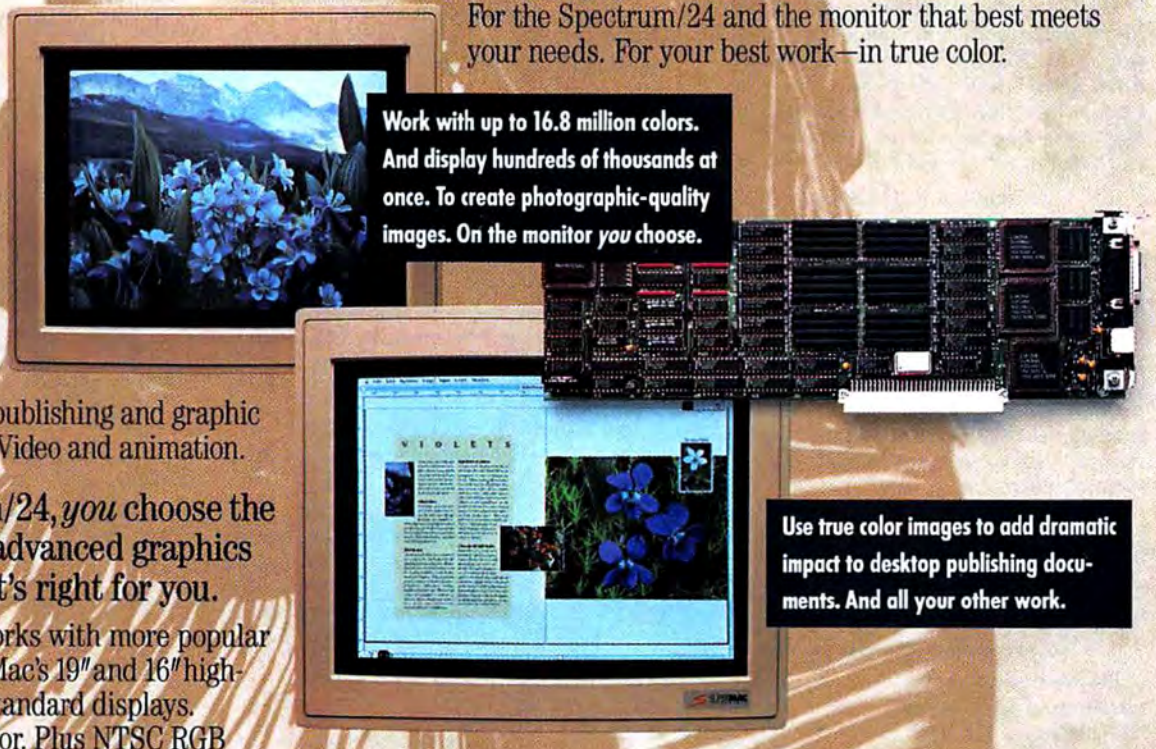
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Nynex Business Center
617-270-6000

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Tech Computer Store
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Canton
NEECO
617-821-2747

Natick
Nynex Business Center
508-651-7630

Sommerville
Cambridge Electronics
617-625-2525

West Roxbury
Nynex Business Center
617-323-4102

West Springfield
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413-736-3696

Worcester
Software & Systems
508-752-8930

MICHIGAN
Ann Arbor
Appa Business Computers
313-769-2727

AC3 Computer Center
313-994-6344

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Heath Zenith
313-772-0416

East Lansing
Number One Graphics
517-332-6231

Grand Rapids
Remex Corporation
616-942-9800

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SSG Laser Works
616-375-8996

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616-344-0276

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314-567-0450

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Nynex Business Center
816-421-6616

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Nynex Business Center
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314-231-6655

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314-962-9100

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314-576-2727

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Century 23
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Omaha
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402-449-1000

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Bedford
Nynex Business Center
603-644-3620

Manchester
Computer Mart
603-625-1474

Plaistow
NEBA Computer Corporation
603-382-8338

NEW JERSEY
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Auto-Grafica
201-343-8585

Lawrenceville
Nynex Business Center
609-882-1414

Paramus
Nynex Business Center
201-444-0490

Parsippany
Nynex Business Center
201-540-0600

Secaucus
Nynex Business Center
201-392-9200

Springfield
Data Systems Computer Center, Inc.
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Union
Nynex Business Center
201-686-1660

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Nynex Business Center
518-458-2222

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716-833-5400

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716-856-7181

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Nynex Business Center
607-754-9120

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Nynex Business Center
516-933-1881

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607-257-2070

Nanuet
Calculator & Computer
914-623-7300

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212-677-1800

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716-427-0066

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716-272-0770

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215-860-1653

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615-269-6010

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615-321-9000

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901-683-8111

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Computerland
512-483-0888

Third Wave Computing
512-343-8255

Dallas
Nynex Business Center
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Retail Sales
214-490-0158

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214-327-4835

Fort Worth
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817-877-1553

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713-964-7300

Macinterfaces
713-522-1557

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804-788-1200

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SUPERMAC TECHNOLOGY

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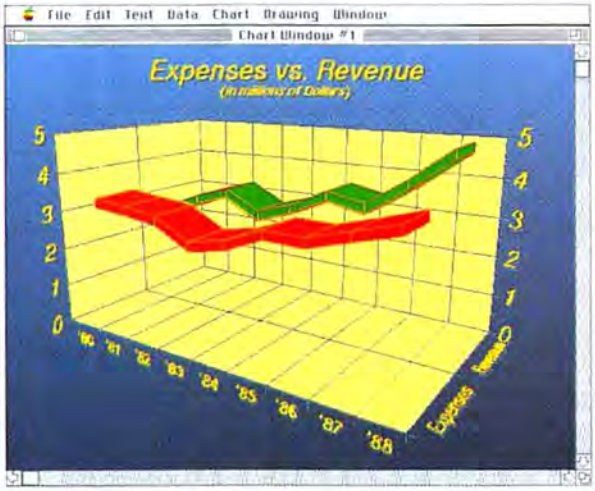
START UP

This month's StartUp has hands-on reviews of the new versions of some old favorites — such as Fastback II, Thunder II, and Cricket Paint — and some newcomers — such as Visual Business No. 5 and Components General Ledger. Check out some of the products that will come out soon in BetaWatch, and stay current with Up to Date. And if you've caught laptop fever, we've also got a roundup of half a dozen low-priced alternatives to Apple's forthcoming portable Mac.

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Smart Art 84

Edited by Russell Ito



DeltaGraph is a new charting and graphing package that combines 8-bit color, 3-D graphics, PostScript, and mathematical and statistical functions.

DeltaGraph Changes Charting

In spite of the Mac's graphic nature, there are surprisingly few Mac charting programs, and the best-known package, Cricket Graph, is long overdue for an upgrade. Enter DeltaGraph, from DeltaPoint. DeltaGraph is a 2-D, 2.5-D, and 3-D charting and graphics package with full PostScript support and 8-bit color.

DeltaGraph keeps its charts and charting data in a single file, the Data Notebook. The charting data is stored on spreadsheetlike pages, and a full array of statistical and mathematical functions is supported. There are 22 chart types, including 2-D and 3-D column, area, and scatter; single and multiple pies; and contour, step, and polar. All charts are customizable, and chart styles can be saved separately and used like style sheets. The 3-D charts can be rotated and viewed from any perspective, and charts can be up to 100 pages in size. Charting of discontinuous data regions is also supported.

In addition to its charting capabilities, DeltaGraph includes a powerful drawing environment. Graduated and radial fills, polygons, arrows, fonts, and Bezier curves are available. In addition to the 256-color palette, the program offers true gray-scale patterns and independent control of foreground and background colors. On monochrome machines, the color palette is labeled and remains functional.

DeltaGraph can import data in tab- or comma-delimited formats, as well as in Excel 2.2, Trapeze, SYLK, and WKS formats, but it exports data only in tab-delimited format. It exports charts in PICT, EPSF, and Adobe Illustrator formats. The package should be available by the time you read this. **— Russell Ito**

● $195. DeltaPoint, 200 Heritage Harbor, Suite G, Monterey, CA 93940; (408) 648-4000.

MUG Shots

Mac User Group News

BBS OF THE MONTH: The Economic Bulletin Board (EBB) is maintained by the U.S. Department of Commerce, 24 hours a day, 7 days a week. The latest national economic information compiled by several government agencies — including the Bureau of Economic Analysis, the Census Bureau, the Bureau of Labor Statistics, and the Federal Reserve Board — is available, as is a list of other government bulletin boards.

Press releases, special reports, and even files ranging from agency telephone contacts to statistics can be downloaded almost as soon as they are written.

The EBB is not free. An annual subscription is $25, with an on-line charge of $6 per hour during the day and $3 per hour at night and on weekends. Call EBB at (202) 377-3870. (You can subscribe on-line.)

PD ON-LINE: If you want to obtain public-domain and shareware programs but don't need the other offerings of on-line commercial services, check out the new CapMug PD/SW Library. This library is available to members and other MUGs by subscription. CapMug is the Capitol Area Macintosh User Group, 1017 Yverdon Drive, Camp Hill, PA 17011, or UG0167 on AppleLink.

Don Rittner is editor of the MUG News Service. Send him MUG news at AppleLink: UG0194.

SCSI Color

For many users, the memory of a black-and-white Mac is as distant as that band Paul McCartney was in before Wings. But for those who still remember — and use — 512KEs, Pluses, or SEs, Aura Systems has created ScuzzyGraph II, a SCSI box that provides a viable eight-color solution for users who need color but can't afford a Mac II.



ScuzzyGraph II gives 512KE, Plus, and SE owners eight-color display for a fraction of a Mac II's cost. Dithering increases the number of colors.

ScuzzyGraph II connects to the SCSI port and doesn't require any modifications to the Mac. Using a Texas Instruments 34010 graphics processor and proprietary software, ScuzzyGraph II traps all the QuickDraw calls and reconstructs the video, in color, on an external monitor. Because of the 34010's speed, there's little degradation in display speed, and, thanks to dithering, eight colors can look like many more. ScuzzyGraph II supports Apple RGB, multisync monitors, and resolutions of up to 1,280 x 1,024 pixels. It can also be used as an interface for large monochrome monitors. ScuzzyGraph II works with all QuickDraw-compatible programs and comes in four models (depending on monitor size). **— Russell Ito**

● $995 to $2,495 depending on model. Aura Systems, P.O. Box 4576, Carlsbad, CA 92008; (619) 438-7730.

Getting Wired

There are basically three kinds of wire for network use: twisted-pair (telephone), coaxial, and optical. Apple's LocalTalk cabling uses twisted-pair, the most familiar option. Twisted-pair wire uses individual wire strands, twisted together and wrapped with insulation. You usually see it as telephone wire inside a building's walls. Unfortunately, the term *twisted-pair* is often used interchangeably with *telephone wire* in general, and some telephone wire (such as that in modular phone jacks) is actually flat and stranded, not twisted. (PhoneNet uses the stranded wire.)

Ethernet networks usually use coaxial cable. It has higher performance characteristics than twisted-pair wire and uses a central conductor wire wrapped with insulation, a conductive mesh, and outer insulation. Coaxial cable is also used in cable-TV installations.

Optical fiber uses a bundle of glass or highly purified plastic fibers to transmit light rather than electricity. The required optical transmitters and receivers make this a pricey option, but it is well suited for use in long-distance or high-throughput networks.

NewsLine

Reports and Analysis

POSTMORTEM FOR POSTSCRIPT?

CUPERTINO, CA — Only weeks after Apple's announcement of a QuickDraw-based outline-font technology, Apple disclosed that it is selling its 16.4-percent stake in Adobe Systems, the creator of the PostScript page-description language that controls Apple's laser printers. At the same time, Apple announced that it is developing independently of Adobe a PostScript "clone" that it expects to complete next year.

U.S. IS IN THE CHIPS

SANTA CLARA, CA — In an attempt to regain a foothold in DRAM-chip production, an industry that Japanese manufacturers currently dominate, a consortium of semiconductor manufacturers — including Advanced Micro Devices, Digital Equipment, Intel, LSI Logic, and National Semiconductor — have banded together in an attempt to raise $1 billion to boost U.S. DRAM production. Plans for the consortium, called U.S. Memories, include constructing a large-scale DRAM-manufacturing plant that would produce 4-megabit DRAMs based on an IBM design. Samples of Japanese 4-megabit DRAMs have already begun shipping.

U.S. Memories' plans also call for the involvement of computer manufacturers — the DRAM consumers — which would give the U.S. greater control over its electronics industry. So far, IBM, Digital Equipment, and Hewlett-Packard have agreed to participate, but several other U.S. computer companies — including Apple and Sun Microsystems — have not yet expressed an interest.

COMPUTER ASSOCIATES BUYOUT

GARDEN CITY, NY — In less than a month, Computer Associates International bought Bedford Software's line of accounting products (including Simply Accounting), all of Cricket Software, and Cullinet. Computer Associates will take over technical support, marketing, and product development of the Bedford products. Cricket will continue to develop and support its own products.

ACCESS ACCEDES TO DELTAPOINT

MONTEREY, CA — Access Technology's Macintosh Division has completed a management buy-out and has spun off a new Mac software publisher — DeltaPoint. DeltaPoint will market and support the three Access Mac products: MindWrite, MindWrite-Express, and Trapeze. DeltaPoint's new releases are discussed in this section.

PHOTOGRAPHY: PETER ALAN GOULD

A Mac in the Hand

There's only one subject that's prompted more prerelease hype and speculation than the movie *Batman*. Of course, we're talking about the portable Macintosh. At press time, Apple's long-rumored Mac-to-go was still just that: a rumor. Two things are definite, though: It won't be cheap, and it won't be light enough to fall comfortably into the laptop category. If you can't wait another minute — or need something more affordable or more portable — here are a few other options to consider. None of them will give you all the functionality of a real Mac portable, but each of them has its uses. Besides, they're all — to borrow a phrase from the Joker — wonderful toys.

Let's get small — *real* small. "Coat pocket" computers are all the rage among the Sharper Image/*thirtysomething* set. These inconspicuous little boxes pack more power than the first microcomputers, in hand-held units that an ever-growing number of converts won't leave home (or office) without. Some are programmable, although their tiny keyboards make them most useful as data banks for phone numbers, appointment reminders, brief memos, and travel-expense logging.



The Organiser II links directly to Focal Point II.

- **Organiser II XP, $249.99. Psion, 118 Echo Lake Road, Waterton, CT 06779; (800) 548-4535.**
- **Focal Point II, $199.95. TenPoint0, 3885 Bohannon Drive, Menlo Park, CA 94025; (415) 329-7699.**

The Psion Organiser II was the first to offer a Mac connection. Psion's Comms Link adapter connects to a standard Mac modem cable and interfaces with most Mac telecommunications software. The Organiser features a free-form database; a diary (with appointment alarms); a calculator; and several optional third-party application modules, including a spreadsheet, a spelling checker, a bar-code reader, and a financial package. It also comes with a built-in BASIC-like programming language. Its display is limited to two scrolling 16-character lines, so you would probably want to do any serious data entry on the Mac and then download the data to the Organiser. The XP model comes with 32K of RAM; optional memory cartridges offer up to 128K each. Its rugged design and programmability suggest that engineers and lab workers will feel most at home with it (that, and its cryptic manual and tricorder-like look and feel).

The Wizard packs power into a clean interface.

- **Wizard, $299. Sharp Electronics, Sharp Plaza, Mahwah, NJ 07430-2135; (201) 529-8200.**
- **Wizard Link Mac, $149.95. Traveling Software, 18702 N. Creek Parkway, Bothell, WA 98011; (206) 483-8088.**



If the Psion is the hand-held computer for techie types, Sharp's Wizard is the choice of the executive set. The Wizard comes with a larger display (up to 16 characters by 8 lines), a more intuitive interface, and more built-in functions (including a calendar, scheduler, telephone directory, world clock, user dictionary with abbreviations, and password protection), although it lacks a programming language. Its slim vest-pocket design unfolds, revealing a larger keypad that's a little easier to use than the Psion if you're sitting but a bit harder to manipulate if you're walking. The Wizard's 32K of RAM can be increased to 256K, and you can expand its functionality by inserting optional modules (such as an expense manager or a foreign-language dictionary) that have their own touch-control interfaces. The Mac

The Affordable Portable

If all you really want in a portable is something that lets you write down your thoughts and feed them into your Mac later, Cambridge North America has solved your problems with the MacLite, a Z88 computer and MacLink Plus software for the Mac (see New on the Menu, July '89).



- **MacLite, $849. Cambridge North America, 615 Academy Drive, Northbrook, IL 60062; (800) 338-0088 or (312) 564-5077.**

The Z88 has limited text and spreadsheet capabilities, but MacLink Plus can convert files into the most common Mac file formats — MacWrite, Excel, WKS, and RTF — so you can do the fancy editing and formatting on your Mac. The Z88 itself is no larger or heavier than a 100-page, spiral-bound notebook. If you need more than an electronic notebook, you can spend hundreds to thousands of dollars more for a DOS machine or keep waiting for Apple's solution to appear. But for taking notes and writing memos, the Z88 does the job at a reasonable price. And best of all, it's more than a rumor. — Jeff Pittelkau

Adventures in Atari

If you're an adventurous Mac hacker, you can cobble together a Mac Plus-compatible laptop for less than $2,500 — a fraction of what Apple is expected to charge for its portable. Take an Atari Stacy laptop (due in September) and add Gadgets by Small's Spectre GCR (due in August) and a set of genuine Mac Plus ROMs, and you've got a 15-pound Mac-compatible Atari ST that runs slightly faster than a Mac Plus, reads and writes Mac disks, and has a 600-x-400–pixel back-lit super-twist LCD display.

Atari will initially equip the Stacy with either 1 megabyte of RAM and a floppy drive ($1,495) or 1 megabyte, a floppy drive, and a 20-megabyte hard-disk drive ($1,995). Mac Plus ROMs (available from specialty electronics stores) go for around $125. Although purists may cringe at the suggestion, the Stacy alternative may be the hacker's choice.

— Stephan Somogyi



● Stacy, $1,495 or $1,995. Atari, 1196 Borregas Ave., Sunnyvale, CA 94086; (408) 745-2000.

● Spectre GCR, $299.95. Gadgets by Small, 40 W. Littleton Blvd., #210-211, Littleton, CO 80120; (303) 791-6098.

interface (called Wizard Link Mac), from Traveling Software, is due out by the time you read this. It will list for $149.95 and will include the hardware and software to translate Wizard data into a variety of Mac formats. TenPointO's Focal Point II includes a software module for importing data from the Psion Organiser, with a Wizard module due out shortly.

The Casio B.O.S.S. (Business Organizer Scheduling System) is another unfolding unit with an even larger (32 character by 6 line) display and — best of all — a QWERTY keyboard layout. Its features are similar to those of the Wizard, although more options are available (including both 32K- and 64K-RAM models, as well as a model with a raised tactile keyboard that's better suited for entering long text documents). The CasioLink Mac interface is due out from Traveling Software by the end of 1989. **— Jon Zilber**

Casio's B.O.S.S. combines QWERTY with portability.

● B.O.S.S., $219.95 to $259.95. Casio, 570 Mount Pleasant Ave., P.O. Box 7000, Dover, NJ 07801; (201) 361-5400.





If what you really want is the status (or security blanket) of having a Mac with you at all times, the most affordable solution is the Smack-a-Mac! This ultralight foam portable — and washable! — unit weighs in at a modest $9.95; a set of three is much cheaper than just one of the other pocket computers and is much easier to juggle.

● Smack-a-Mac!, $9.95. Smack-a-Mac!, 1706 Linbrook Drive, San Diego, CA 92111; (619) 279-1919.

Up to Date

Changes New and Noted

INTERLEAF has dropped the price of the Macintosh version of its high-end publishing application, Interleaf Publisher, from $2,495 to $995, placing its price much closer to that of page-layout applications such as PageMaker, Ready,Set,Go!, and QuarkXPress. Interleaf, Ten Canal Park, Cambridge, MA 02141; (617) 577-9800.

FINALE, Coda Music's much-ballyhooed music-notation program (see "Measure for Measure," August '89) has also undergone a substantial price cut, from $1,000 to $599. Users who bought Finale before the price was reduced are being offered a choice of three premiums, such as a free upgrade to the forthcoming Finale 2.0. Coda has also announced MusicProse, a scaled-down version of Finale, for $249.
Coda Music Software, 1401 E. 79th St., Bloomington, MN 55425-1126; (612) 854-1288.

CAPTURE, Mainstay's screen-shot utility, is now a cdev instead of an INIT. It can be activated from any user-defined key combination, and graphics can be saved to the Clipboard or as a file in PICT format. According to Mainstay, Capture supports 32-bit color QuickDraw.
$79.95; upgrade, $15. Mainstay, 5311B Derry Ave., Agoura Hills, CA 91301; (818) 991-6540.

PLUS 1.1, the German super-HyperCard that's trying to out-super SuperCard is challenging its American rival head-on. Olduvai is selling Plus version 1.1 to SuperCard owners for $99 ($100 off the retail price) plus $5 shipping and the return of their original SuperCard program disks to Olduvai. The offer is good through December 31, 1989.

MULTICLIP 1.01 began shipping just as our review went to press last month. Olduvai says this version solves earlier conflicts with WriteNow 2.0, SuperLaserSpool 2.0, and HierDA. It's also now compatible with Nisus 1.01, Word 4.0, and PageMaker 3.02.
MultiClip 1.01, $99; upgrade, free with return of master disk. Olduvai, 7520 Red Road, Suite A, South Miami, FL 33143; (305) 665-4665.

MASTERJUGGLER 1.5, ALSoft's new version of its font manager, now includes FontDirector, which resolves and eliminates NFNT numbering conflicts. Users can also open as many as 120 resource files simultaneously. An application list and pop-up menu allow the use of all MasterJuggler functions from within any application.
$89.95; upgrade, free to registered users. ALSoft, P.O. Box 927, Spring, TX 77383-0927; (713) 353-4090.

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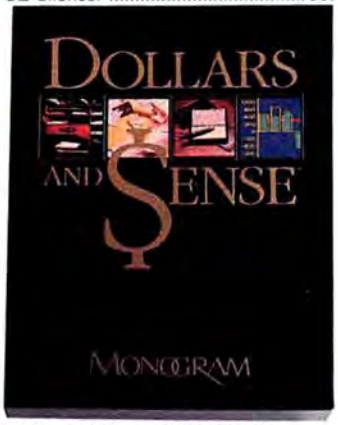


MaraThon 030 (Dove)
Put a fast running 68030 chip into your Mac II with this Marathon board. Features a 256K bytes internal data cache, 256 bytes of instruction cache, and full 32 bit microprocessor operating at 32MHZ. Quick and easy installation. (accelerators) **$969.**

MaraThon 030X
Designed specifically for the Macintosh IIX, plugs into the existing 68030 socket and features a Motorola MC68030 microprocessor, operating at 32 MHZ, has a built-in Paged Memory Management Unit available for A/UX systems. Improves intensive applications, and other processor-demanding operations. (accelerators) **$999.**

ACCESSORIES

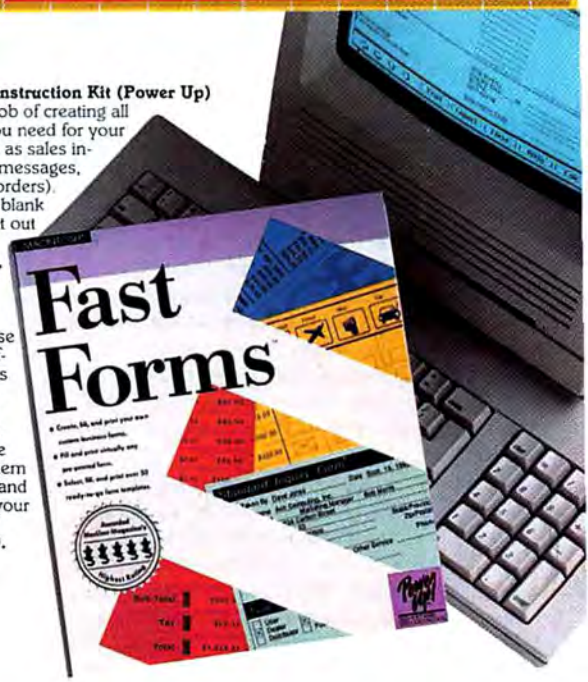
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Toner Cartridges LaserWriter 109.
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FastForms! Construction Kit (Power Up)
Simplifies the job of creating all those forms you need for your business (such as sales invoices, phone messages, and purchase orders). You can make blank forms and print out and fill in manually. But, for a Mac equipped business you can design these forms with self-calculated fields and automatic formatting for parts numbers and dates. Use the DA to fill them out on-screen and store them in your database. (business) **$89.**



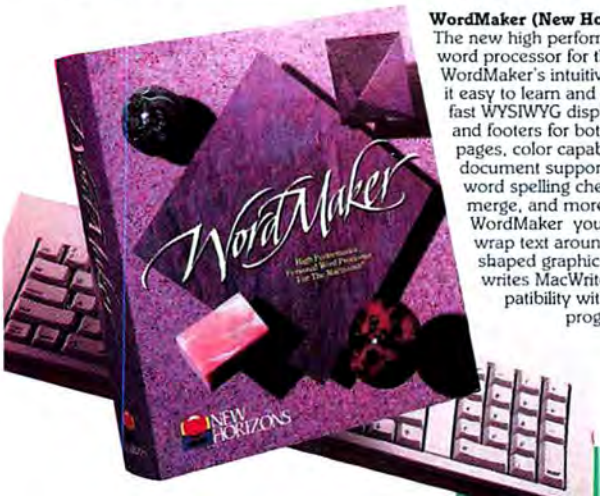
Static Stopper Spray 11.
Smack-a-Mac
Smack-a-mac 9.
SoundSight
FastKeys 39.
Targus, Ltd.
Deluxe Plus/SE-XKB Case (black)...75.
ImageWriter II Case (black) 49.
Mac Plus/SE Case (black) 59.

ACCOUNTING AND PERSONAL FINANCES

Aatrix
Checkwriter 37.
Payroll 3.5 109.
Payroll PLUS 155.
TimeMinder 155.
Bedford (Computer Associates)
Simply Accounting 209.
Brown-Wagh Publishing
MacLedgers 159.
Service Industry Accounting 209.
DAC
Dac-Easy Light 42.
Intuit
Quicken 1.5 37.
MECA
Managing Your Money 125.
Monogram
Business Sense 269.
Dollars and Sense 81.
Peachtree
Back to Basic Professional 159.
ShopKeeper Software
Bill-It 99.
Survivor
MacMoney 3.5 60.

BLANK MEDIA

B.A.S.F. made in U.S.A
DS/DD (box of 10) 15.
DS/High Density (1.44 Meg) 29.
Maxell
DS/DD (box of 10) 19.
Peripheral Land, Inc.
Turbo 40 Cartridge 115.
Sony
DS/DD (box of 10) 15.

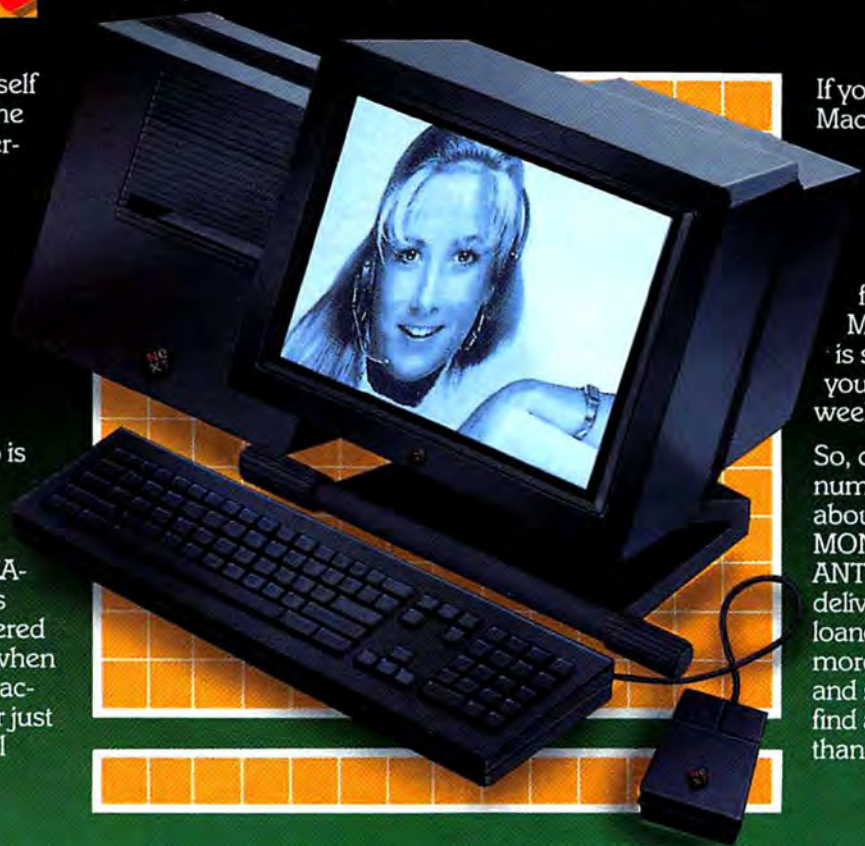


WordMaker (New Horizons)
The new high performance, personal word processor for the Macintosh. WordMaker's intuitive design makes it easy to learn and to use. It has a fast WYSIWYG display, headers and footers for both left and right pages, color capability, multiple document support, a 100,000 word spelling checker, print merge, and more! With WordMaker you can even wrap text around irregularly shaped graphics. It reads and writes MacWrite files for compatibility with other programs. (word processing) **$69.**

PixelPaint Professional (SuperMac Software)
The first "true color" universal paint program for the Mac. Designed to grow with you from 8-bit to 32-bit systems. From general painting to advanced design. Use advanced masking, image merging, fill effects, dithering, distortion and perspective for advanced graphics. True-color features like anti-aliasing for smooth shapes, a realistic air-brush, and transparency control allow you to create, scan and modify photo-graphic quality images. (graphics) **$409.**



Win THE NeXT COMPUTER



Just imagine yourself as the winner of the most powerful personal computer ever built! More RAM, more speed, incomparable CD quality sound — Steve Job's personal computer of the 1990's.

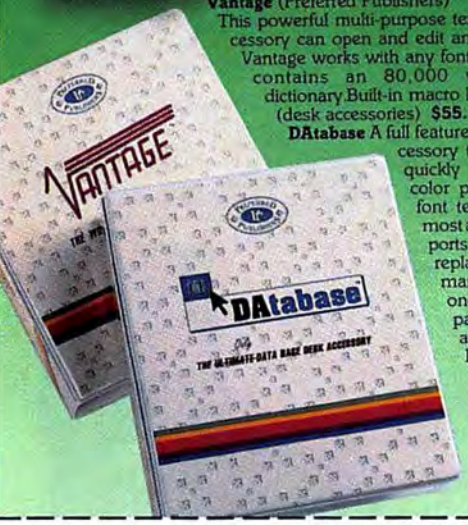
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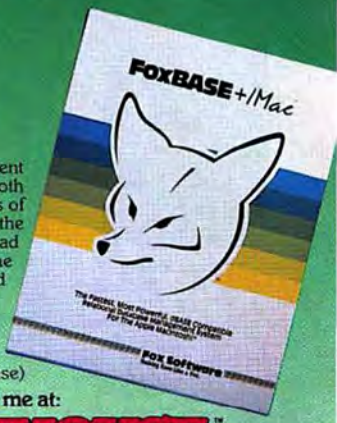


Vantage (Preferred Publishers)
This powerful multi-purpose text editing desk accessory can open and edit any kind of text file. Vantage works with any font, size or color and contains an 80,000 word Webster's dictionary.Built-in macro language included. (desk accessories) **$55.**

DAtabase A full feature database desk accessory that can store and quickly retrieve graphics, color pictures and multi-font text. Imports from most applications and exports DIRECTLY to many, replacing or enhancing many programs with one powerful and expandable data management package. Pop-up menus, calculated fields and background graphics create an environment that is both powerful and fun to use. (desk accessories) **$72.**



KeyPlan (Symmetry)
KeyPlan simplifies project managment, so you can get the job done. Start with the outliner, where you can put your ideas in order. KeyPlan instantly converts your outlines to charts. Charts and graphics include PERT, GANTT, area, line, bar, and scatter. Just click the mouse and move to any view. KeyPlan adapts to your style. (business) **$339.**



Fox Base +/ Mac 2.0 (Fox Software)
The premier Macintosh database management system. Create virtually any report output in both columnar or free-form styles. Produce labels of almost any size and configuration. Look at the actual output you'll create before you print! Load up to 16 external XCMD'S and XFCN'S at one time. Access these external functions and commands directly from within FoxBase+ programs. Also, insert pictures, graphics or logos anywhere in your report. Prepare reports that combine data from up to 10 related databases, plus much more. (database) **$255.**

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Dust Covers
Basic Needs dust covers look great! Machine stitched and custom fitted. The covers are made from washable rip-stop nylon and won't crack, yellow, or fade like similarly priced vinyl.(accessories) **Starting at $11.**

Preferred Publishers
DAtabase 72.
Vantage 55.
Solutions
SmartScrap & The Clipper 2.0 45.
TENpointO
Open IT! 49.

DESKTOP PUBLISHING PRODUCTS

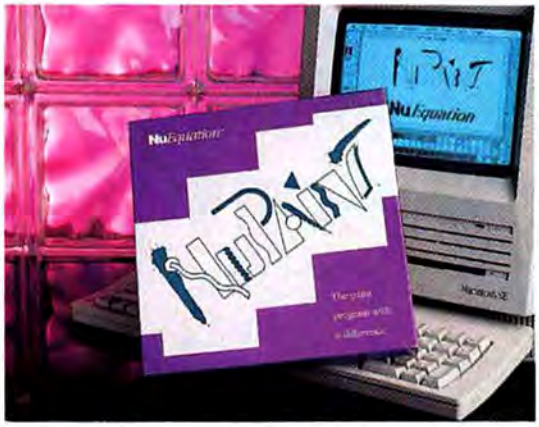
Aldus
PageMaker 3.01 389.
Color Extension 179.
Blue Sky Research
Textures 375.
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DTP Advisor 47.
Emerald City Software
Smart Art I –Text Effects 89.
Icom Simulations
MacKern 119.
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ImageStudio 275.
Ready,Set,Go! 275.
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Read-It! TS (Thunderscan) 79.
Quark
QuarkStyle 175.
Xpress 495.
Springboard
Springboard Publisher 109.
U.S. MicroLabs, Inc.
FontSizer 79.

DISK DRIVES/BOARDS

Aristotle Industries, Inc.
HardPac Mac 20 Meg 549.
HardPac Mac 40 Meg 799.
HardPac Mac 80 Meg 1195.
HardPac Mac 105 Meg 1395.
CMS
MacStack 20 Meg 529.
MacStack 30 Meg 545.
MacStack 45 Meg 625.
MacStack 60 Meg 699.
MacStack 80 Meg 799.
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800K External Floppy Drive 149.
Under the Mac 20 Meg 439.
Under the Mac 30+ Meg 499.
Under the Mac 40+ Meg 549.
Under the Mac 65+ Meg 629.
Under the Mac 80+ Meg 739.
Dayna Communications
Dayna File Single 360K (5 1/4") 529.
Dayna File Dual 360K & 1.44M 669.
Dolphin Systems Tech
Integra 20 Meg 549.
Integra 30 Meg 599.
Integra 40 Meg 769.
Integra 60 Meg 819.
Integra 80 Meg 1179.
Flipper 150 Meg Tape Backup 1439.
Flipper Removable 44 Meg 1139.
Kennect Technology
Drive 2.4 375.

HardPac Mac (Aristotle)
Portable hard disk drive. Store your data and just unplug this compact, self-contained unit, tuck it into your briefcase, and take your data with you. The sturdy injection molded case, shock mounting, and automatic head parking protect the drive while it's in transit. HardPac Mac is a SCSI device with an input and output port for daisy-chaining. The SCSI address select switch allows you to plug it in without disrupting the host system.(drives)
20 meg **$549**
40 meg **$799**





NuPaint (NuEquation)
NuPaint offers improvments on all the standard paint program functions plus a host of new tools, such as masking tape, razor, trowel, shadow, smoothing, halftoning, and high resolution bitmap editing. The mixing bowl randomly stirs up the dots to create a more realistic appearance. Borders and backgrounds can have up to 32 by 32 pixels. NuPaint provides up to 13 viewing and manipulating modes, including a double windowshow page.(graphics) **$89.**

Rapport 229.
MiniScribe
20Mb Raw Int. Drive 329.
45Mb Raw Int. Drive 489.
Mobius
MultiScreen Video Card 315.
PCPC
MacBottom Hard Drives Call.
Peripheral Land, Inc.
Infinity Turbo 40 Meg 1235.
Turbo Floppy 1.4 329.
Quantum
Quantum 40 MB Raw Drive 545.
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EDUCATIONAL PERSONAL

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Alphabet Blocks 3.01 30.
Talking Tiles 69.
Bootware Software
ResumeWriter Pro 60.

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Pamper your Mac with a Targus carrying case made of Zilicone treated nylon to give you waterproof durability and an impact absorbing high-density foam layer with a soft protective lining for complete protection. Cushioned shoulder pad and handles provide extra comfort and convenience. Plus there's room for everything from your Mac, a hard disk drive, and the extended keyboard to pockets for your mouse, floppies, cables, and pens. Full Targus Macintosh line some available in black, blue, burgundy, and platinum. (accessories) **$75.**

Davidson
Math Blaster 27.
Speed Reader II 36.
First Byte
The Dinosaur Discovery Kit 27.
The Puzzle Storybook 27.
The Rhyming Notebook 27.
Fair Tide Technologies
Navigate! mono 209.
Great Wave
KidsTime 1.2 26.
NumberMaze 26.
Learning Company
Reader Rabbit 31.
MicroTech
Elementary Signer 49.
Finger Signer 29.
The Software Toolworks
Mavis Beacon Teaches Typing 35.
Voice & Video Instruction Videos
HyperCard or Pagemaker 3.0 ea 35.
Word 4.0 Video Tape 35.

ENTERTAINMENT

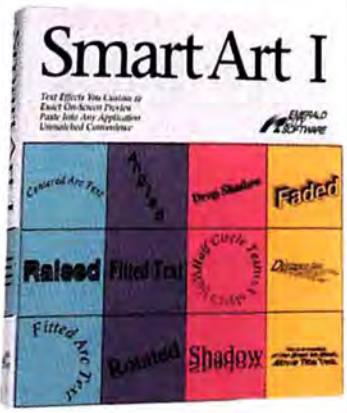
Access Software, Inc.
World Class Leader Board 27.
Artworx
Daily Double Horse Racing 19.
GrailQuest 19.
Broderbund
Ancient Art of War At Sea 27.
Shufflepuck Cafe 24.
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DelatPoint, Inc.
Trapeze 2.1 149.
Adobe Systems, Inc.
TrueForm SetUp 275.
AEC Management Systems
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Full Impact 249.
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Claris
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WingZ 259.
MetaComet
Accu-Weather Forecaster 59.
Microsoft
Excel 2.2 249.
PowerPoint 2.1 249.
Works 2.0 185.
Nolo Press
For the Record 29.



SmartArt-I Text Effects (Emerald City Software)
Bring custom text effects to your favorite word processor, page layout or presentation program. Smart Art uses PostScript language inside your laser printer to preview precisely how your effect will print. Rotate text, fit text to exact size; modify effects instantly. SmartArt comes with 15 of the most wanted text effects. You don't have to be an artist to look like one! Requires Mac SE, Plus or II and a PostScript laserprinter. (desktop publishing) **$89.**

WillMaker 32.
Power Up
Calendar Creator 38.
FastForms! 89.
ProPlus
Wall Street Investor 469.
Satori
Bulk Mailer 3.2.3 78.
Softview
FormSet 52.
MacInUse 42.
Symantec
More II 2.01 255.
Symmetry
KeyPlan 339.
Synex
Mac Envelope 4.1 55.
Vertical Solutions
FastLabel 49.

MiniCad+ 2.0 (Graphsoft)
This year MiniCad+ is the people's choice, Winning both the U.S. and Australian MacWorld World Class Awards for CAD. For the price of most 2D CAD packages, MiniCad+ provides 2D, 3D, a hotlinked spreadsheet and a programming language. The quality is unsurpassed. **$519.**

Blueprint
This new professional-level 2D CAD program has it all at an unbelievable price. Layers, fillets, DXF, constraint Palette, high precision, auto-dimensioning, hatching, symbol library, encapsulated postscript plus more. (cad/cae) **$349.**



CAD/CAE

Claris
ClarisCAD 599.
Generic Software
Generic CADD Level 1 85.
Symbols Libraries available Call
Graphsoft
Blueprint 349.
MiniCad Plus 519.
Innovative Data
MacDraft 144.
Dreams 269.
I.S.I.
Precision 399.

COMMUNICATIONS

CE Software
QuickMail 2.0 (1-10 Users) 259.
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DATABASE SOFTWARE

Acius
4th Dimension 349.
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dBase Mac 295.
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FoxBASE+/Mac MultiUser 355.
FoxBASE+/Mac Runtime 269.
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ProVUE
Panorama 205.

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AffiniFile 45.
Casady & Greene
QuickDEX 31.
Exodus Software
ExpressWrite 65.
Retriever 59.
JAM Software
Smart Alarms & Appointment Diary . 49.
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MacMoney 3.5
Real accounting for the real home budget. Tells you what's due and when! Tracks expenses, credit cards, assets, liability, cash or income accounts. Create up to 250 named categories. (finance) **$61.** For the business user there is also InvoicIt. **$49.**



Calendar Creator
Now you can keep any annotated calendar, from corporate to personal, neat, accurate, and up-to-the-minute. You can make separate calendars for each person in your office, family, or other group, then merge them into over 100 kinds of daily, weekly, monthly, and yearly calendars. (business) **$38.**



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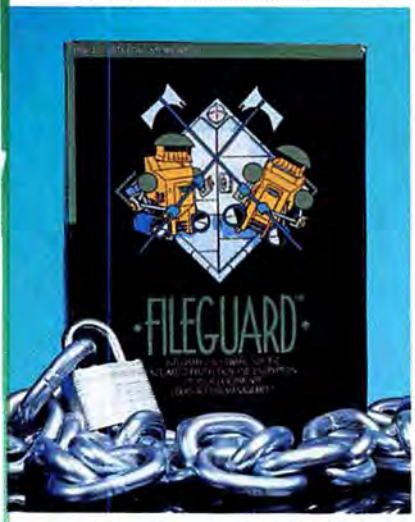
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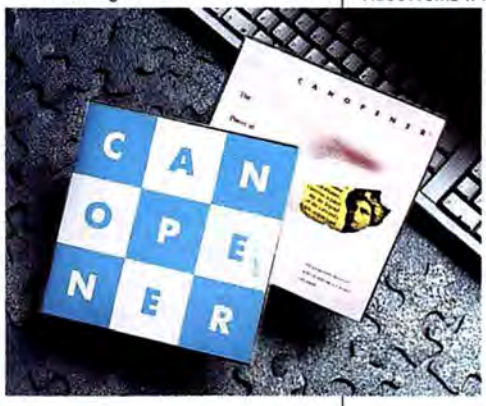
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Automatic protection with **FileGuard (A.S.D)** Operating totally transparently, FileGuard is the integrated encryption utility that provides the most comprehensive and transparent solution to todays security and confidentiality problems. Upon saving a new document, FileGuard gives you the option to password-protect it. Encryption is performed automatically when you quit your application. Opening protected documents is just as easy and automatic. When you double-click on an encrypted document, FileGuard asks for your password, then immediately decrypts and launches the appropriate application. The document is automatically re-encrypted when you quit. (utilities) **$129.**

Joseki Tutor 30.
PCAI/XOR
Lunar Rescue or MacGolf 2.0 34.
MacGolf Classic 53.
Road Racer 39.
NFL Challenge 54.



CanOpener
(Abbott Systems)
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Spectrum HoloByte
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PT109 or Gato ea 26.
Solitare Royale or Tetris ea 20.
Springboard
Hidden Agenda 36.
The Software Toolworks
Chessmaster 2100 32.
Life & Death 34.
The Hunt for Red October 32.

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VideoWorks II HyperCard Driver 60.

Miles
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Multi Ad Services
ProArt: Bus., Sports or Holidays ea.95.
ProArt: Trilogy CD format 229.
NuEquation
NuPaint 89.
Paracomp
Swivel 3D 289.
Silicon Beach
Digital Darkroom 259.
Super 3D 2.0 325.
SuperPaint 2.0 128.
SuperMac
PixelPaint 2.0 199.
PixelPaint Professional 409.



FastTrack Schedule
Produces financial charts in outline format. Open them up for more detail or collapse to see the "big picture". It won't take up your time with complicated setup and extensive data entry. Print informative charts and graphics. (business) **$115.**



Harmony Grid
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Bulk Mailer 3.23 The ideal mail list management system. Duplication elimination, sorting capabilities and search codes, utilizes all fonts and styles, mail merge, envelope printing, plus much more. Works with Canadian and other international postal requirements.(business) **$78.**

Sensible Grammar (Sensible Software)
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Tactic Software
Art Clips 59.
Zedcor
Deskpaint 2.0 65.

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Z88 AC Adapter 9.
Z88 Pocket Modem 225.
Z88 512K RAM Cartridge 359.
The Complete PC
Half-Page Scanner 379.
Page Scanner 799.
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Dest PC Scan Plus SPECIAL 799.

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The Magnavox 9CM080 Mac II Monitor is fully compatible with Apple's Macintosh II computer when equipped with a high resolution color card (Apple #MO211). The monitor is a 14" diagonal and features a super fine .29 dot pitch. Analog inputs allow you to display up to 256 colors on a pallet of 16 million, with a resolution of 640 X 480 using Apple's expansion kit (#MO213). The monitor includes cables and has a two year parts and labor warranty. A great value. (hardware) **$599.**



General Computing Company
WriteMove Ink Jet Printer 585.
Magnavox
Color Monitor 14" 599.
Seikosha America
Seikosha Printer (dot-matrix) 235.
ThunderWare
LightningScan 409.
ThunderScan 5.0 189.

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HyperBible King James Version 149.
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Bright Star Technology
HyperAnimator 99.
HyperPress Publishing
Script Expert 45.
ICOM Simulations
HyperTMON 75.
MicroMaps
HyperAtlas 64.
Power Up
HyperTutor 29.

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The Mac's most powerful paint DA now bundled with the Mac's most powerful draw DA. Includes Auto Trace, Browse and on-line help. MacPaint, compatible. (graphics) **$65.**
ZBasic 5.0
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IS/ADB Tablet 12 x 12 385.
IS/ADB Tablet 12 x 17 625.
Cordless 4 Button Cursor 65.
Mouse Systems
A+ Mouse (512/Plus or SE/II) Call.
Summagraphics
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Manx Software Systems
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Aztec C+SDB or C+MPW ea 99.

Microsoft.
QuickBasic 65.
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Prototyper 149.
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Lightspeed C 4.0 169.
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MaraThon 030X 999.
MaraThon Multi-Comm 315.
MacSnap 2S 349.
MacSnap 4S 698.

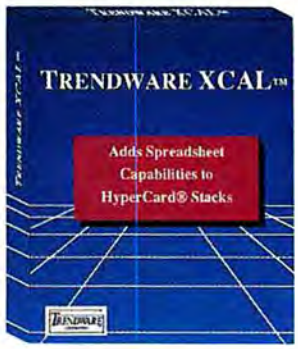
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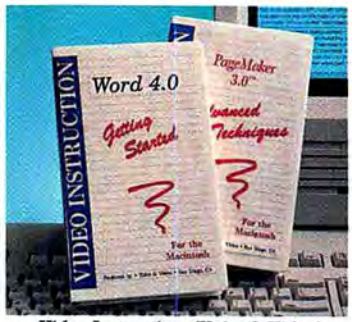
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Hayes
Smartmodem 1200 299.
Smartmodem 2400 429.
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ProModem 2400M 199.
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FAXstf Modem 525.
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Supra Modem 2400 149.
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MUSIC AND SOUND

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MIDI Interface 59.
MIDI Basic 30.
Bogas Productions
Super Studio Session 2.0 69.
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MacDrums 31.
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Electronic Arts
Deluxe Music Construction 2.5 84.
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Master Tracks Pro 3.0 259.
NoteWriter 189.
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Checkwriter (Aatrix)
Enter recurring transactions and it reminds you to write checks and enter deposits. Print your own ledgers, debits/credits and tax sheltered transactions. Unlimited number of checking accounts and transactions per account. Lets you design your own check and stub, and will write them too! **$37.**
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Arkanoid (Discovery Software)
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MacUser HONORABLE MENTION

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Timbuktu 2.0.1 65.
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PhoneNet Star Controller 1095.
Punch Down Block Tool 9.
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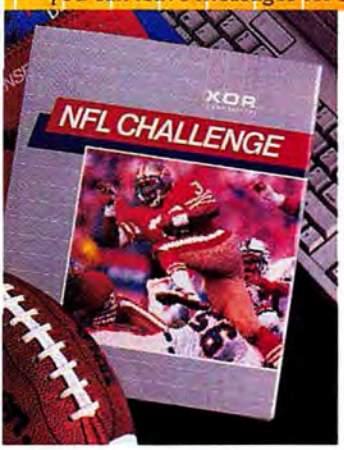
Aegis Development, Inc.
Doug Clapp's Word Tools 42.
Deneba Software
BigThesaurus 59.
Spelling Coach Pro 115.
Electronic Arts
Thunder II 52.

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Microlytics
Electronic Word Finder 75.
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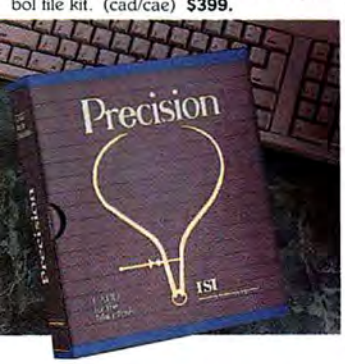
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Precision (I.S.I.)
Precision is a high performance 2-1/2D CADD solution for the Macintosh. This full featured package offers extensive drawing and editing features such as global replace symbols, in-depth analysis, powerful macro files and complete dimensioning capabilities. Precision at no extra charge includes acomplete range of plotter drivers, import/export utilities for DXF and IGES files, 800 phone support and over 1000 architectural and mechanical symbol file kit. (cad/cae) **$399.**



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WriteNow 2.0 119.
WordPerfect Corp.
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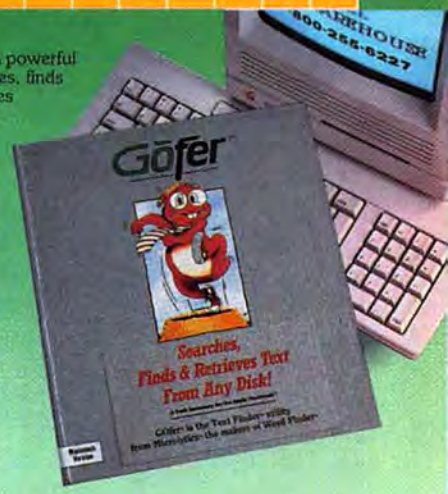
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GRAPHICS

Visual Business No. 5

Exciting 3-D effects make this presentation package stand out, but some of its basic features still fall flat.

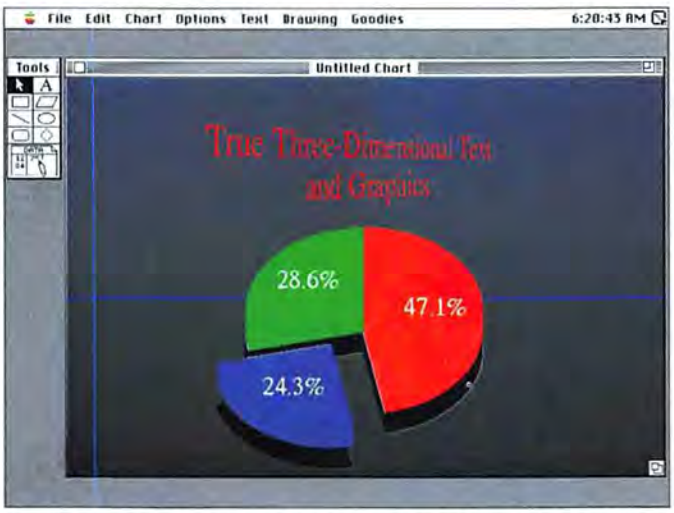
If gimmicks count, Visual Business No. 5 is in good shape because it has two. The first is its name, a salute to Chanel No. 5. The second is an impressive gee-whiz feature: true 3-D graphics and text. That feature, coupled with support for a wide range of output devices, almost makes Visual Business No. 5 a match for the competition. Almost. It's certainly good enough to deserve a look, but you may find that you don't need 3-D as much as you thought.

WHAT IT IS Visual Business No. 5, a port of the DOS program GraphPlus, is primarily a charting package with some presentation features. You can enter data manually with the entry tool, paste it in from a spreadsheet, or import it as a SYLK file. The data file can be up to 256 columns by 2,500 rows. You can also enter column headings and value (row) names for legends, enter x-axis labels, and set the color that will be used for each series (column) in the chart.

Once you've entered the data, you can choose from several chart types, including bar charts, line charts, scattergrams, and pie charts (including exploding pies). You can create text tables instead of charts and choose from different options for each chart type.

The overall charting capabilities of Visual Business No. 5 are excellent — even without its 3-D effects. But it's the 3-D effects that make the charts leap off the slides.

Visual Business offers two kinds of 3-D effects. The first kind is simulated 3-D, where shading is added to 2-D objects to make them seem 3-D. Visual Business does simulated 3-D very well. It also does true 3-D, where you specify the perspective and the rotation of any graph. You can add true 3-D to text.



Visual Business No. 5, a presentation package ported from DOS, creates true 3-D text and charts. You can adjust the perspective and the rotation.

The package comes with drawing tools that work like similar tools in other drawing programs. If you need to do more-complex drawing, you can use the Paste From command to read any PICT or EPSF file directly onto a slide. You can design vertical, horizontal, angled, or circular (spotlight) graduated backgrounds by cross-fading and combining two or three colors.

Visual Business No. 5 comes with a companion application, Output Manager, that processes your slides. Output Manager supports film recorders (Presentation Technologies Montage; Mirus; Management Graphics Solitaire; and Matrix PCR, QCR, Procolor, and SlideWriter) and thermal-transfer color printers (Tektronix 4693D, Matrix TT200, and Mitsubishi G650). It also generates on-screen slide shows and includes a Light Box for arranging your slides before displaying or printing them.



Visual Business No. 5's Output Manager lets you schedule your printing tasks to color printers or film recorders, arrange slides with a visual Light Box, and even give on-screen slide shows. Unfortunately, it can't read Visual Business files directly — you must save them as PICT images first.

Because most color-output devices don't support PostScript, Output Manager uses special outline fonts that come with the package to produce high-quality text output regardless of the output device. The package includes only the four basic LaserWriter fonts — the set of additional LaserWriter Plus fonts costs $195 more.

HOW IT WORKS What keeps Visual Business from knocking off Persuasion and PowerPoint? Quite a bit. Visual Business requires one document per slide rather than storing an entire presentation, which means you can't create true templates or perform global changes. It also means a lot of disk housework if you make many slides. The Visual Business manual has fewer than 100 pages, and although it covers all the major features of the program, it cannot be

considered comprehensive.

Output Manager can't read Visual Business files directly; you must store them as PICT images first. Because Visual Business can't alter a PICT file, you must have two copies of each slide when printing. Output Manager requires a lot of memory, it's finicky, and you may have to remove all your INITs to get it to work properly (even if your Mac has 8 megabytes). The program also requires that film recorders be set to their factory-default SCSI address, so you may have to juggle addresses.

Visual Business No. 5 is not for everyone. It is more difficult to learn and use than products such as Persuasion and PowerPoint, but if you need one of its special features, you may find it worth the trouble. In the proper situation, eye-popping 3-D effects may be just what your presentation needs to keep your audience riveted. On the other hand, you should also remember that 3-D is a mixed blessing. If your chart's third dimension doesn't contain anything significant, it may confuse matters instead of adding information. If Visual Business Systems adds the kind of features available in other desktop-presentation packages, then Visual Business No. 5 may yet live up to its namesake.

— Robert R. Wiggins

Get Info

Visual Business No. 5 ¥¥¥

List Price: $395
Published by: Visual Business Systems, 700 Lake St., Suite H, Ramsey, NJ 07446; (800) 462-3483.
Version: 1.02
Requires: System 6.0 or later; Output Manager requires 2 megabytes.
Application Size: 327K; Output Manager, 148K; outline-font files, 680K.
Compatibility: Macintosh II or later.
Copy Protection: None

UTILITIES

TextPert

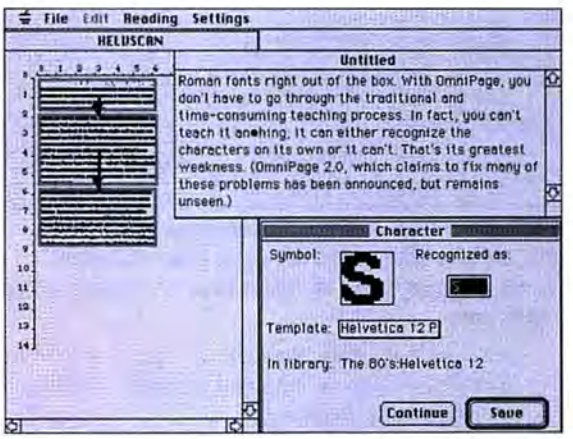
Serious OCR is now available to a much wider audience, but they'd better be patient — TextPert's no speed demon.

TextPert is one of the name players in the major leagues of optical character recognition (OCR). Like OmniPage, Read-It!, and AccuText, it promises to make your scanner a vastly more useful tool by turning scanned pages into editable text. OCR software either replaces the scanning software provided with the scanner or works on TIFF images — as TextPert does — or other special-format files.

WHAT IT IS OCR programs are more effective when they work directly with a scanner because fewer steps are involved and performance is almost always better. The problem is that there are many types of scanners, and each imposes different requirements on the software. Special drivers have to be provided for each scanner. TextPert offers a good range of drivers, and if you have one of the more-common units, TextPert is likely to work directly with it.

TextPert has two claims to fame. The first is its reasonable hardware requirements. Unlike OmniPage (which must have a 68020 or 68030 for speed and at least 4 megabytes), TextPert runs on a Mac Plus with 1 megabyte. The second claim is that, like OmniPage, the program has intelligence (Expert Text Reader), with which it can directly recognize a fairly large group of Roman fonts. With OmniPage, you don't have to go through the traditional and time-consuming teaching process. In fact, you can't teach it anything; it either recognizes characters or it doesn't, which is its greatest weakness. (OmniPage 2.0, which claims to fix many of these problems, has been announced but remains unreleased.)

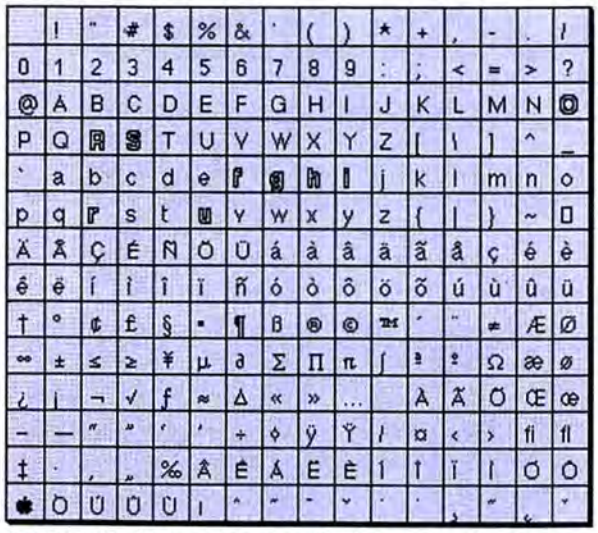
Although TextPert runs on a 1-megabyte Plus, performance is nothing to write home about. You'll need a considerable amount of hard-disk space to work with the program. If you install all the files TextPert supplies, you'll use nearly 3 megabytes of your hard disk. Although the minimum configuration can fit in 2 megabytes, you should allow considerably more room because you'll need space to store the scanned images, which can be large, or additional lookup tables. The reason the program takes up so much room is that it supports more than 30 languages (Roman faces only — no Greek, Arabic, Chinese, Russian, or Hebrew). Among the languages supported are Welsh, Scottish Gaelic, Estonian, and Serbo-Croatian. Launching the program is slow, no matter which configuration you use.



TextPert, a teachable OCR program, does a good job of recognizing characters on its own, but you need to teach it to optimize its performance. The active window is the teaching window. The original scan is at left, and the recognized sample is above the active window.

For optimal performance, TextPert really needs to learn fonts. Even at its best, a little teaching really helps. Fortunately, TextPert has a slick, effective teaching mode. To teach TextPert a font, start by creating a new Library and Template. Then scan a text sample (three or four paragraphs should be enough if all

the characters are represented). Each time TextPert is uncertain of a character, it shows an enlarged version of the character, its best guess, and the probability that it's right (in its opinion). You can accept the guess by pressing the Enter or Return key, which enters the guess into the lookup table as a taught character. Otherwise, you can type in the correction for future use. As you work through the scan, TextPert's accuracy and speed improve, generally quite dramatically.



This is TextPert's font table. The outlined characters have been taught. The more characters it learns, the better the system performs, so it pays to take the time to teach it — especially if you use many fonts.

TextPert does several passes on each page before creating a results file. The first pass identifies elements. After the program has shown you its decisions, you can specify exactly which parts of the page it should read. You can also elect to read reversed text (white on black). After you've made your selections or accepted those automatically chosen by the program (it's quite good at that), the actual character recognition takes place.

HOW IT WORKS The results depend on how well you've taught the program to read the fonts, how "clean" the original was, and how straight the original was on the scanner bed. (All OCR software is sensitive to skewed pages.) TextPert is less sensitive to these variables than is OmniPage, but that doesn't mean you can get away with much. On the other hand, TextPert handles glossy originals much better than OmniPage does. The processed file can be saved as an ASCII text file, a MacWrite file, or a Word (3.0-family) file.

The manual says that the default settings work most of the time. That's true only if you're willing to accept 90- or 95-percent accuracy. Except in the shortest documents, that's far too many errors. OmniPage, when it reads a file, usually achieves better than 99-percent accuracy. TextPert can achieve that as well, but for it to achieve those accuracy rates, you must do some teaching.

TextPert's speed can be increased in several ways. You should never run it with the full set of language libraries on — use only the ones your document requires. Better yet, teach the program the necessary fonts and don't use any libraries. Since there are orders-of-magnitude fewer characters to search through, the speed increases.

When everything is set up, TextPert is still only a moderate performer in terms of speed. That performance is affected by the capabilities and speed of the Mac you're using too — the more RAM you have, the better the performance. When compared with the other major OCR players on equivalent machines, it easily holds its own. When it's run on a 1-megabyte Mac Plus, performance is of the "let's read the next chapter of the mystery novel while it processes the next page" type. In other words, while the claims are true, I wouldn't buy TextPert to use on a Plus unless I had no other choice.

That's a reasonable point. TextPert makes serious OCR available to a much wider audience. They'll need patience, but TextPert gets the job done.

Late-breaking note: Version 3.01 was released just as we went to press. The only change claimed is improved speed, which makes sense since speed was the thing that most needed improvement in version 3.0.

— Steven Bobker

Get Info

TextPert ★★★½
List Price: $995
Published by: CTA, 747 Third Ave., Third Floor, New York, NY 10017; (212) 935-2280.
Version: 3.0
Requires: 1 megabyte; high-resolution (at least 200-dpi) scanner.
Application Size: Depends on number of modules loaded; can be more than 2.5 megabytes.
Compatibility: Mac Plus or later.
Copy Protection: None

UTILITIES

Fastback II

The major upgrade of Fifth Generation's popular backup utility is a solid, if sometimes rather quirky, performer.

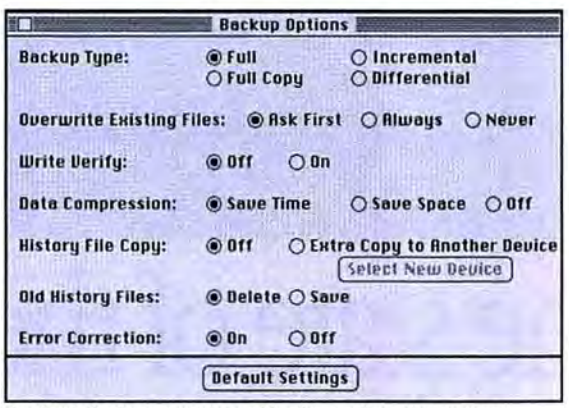
As falling prices put more and larger hard disks on the desktops of Mac users, the need to keep your data secure and manageable grows in importance. Fastback II, the second edition of Fifth Generation Systems' popular hard-disk–backup program, takes a good, strong shot at covering these needs, with its power, convenience, and intelligent set of options.

WHAT IT IS In addition to having generally good speed and the ability to compress data, which requires fewer disks per backup, Fastback II saves time with its clever partial-backup features. After doing a full backup to floppies or a tape drive, you can regularly make any number of partial backups, saving only the files you've changed since the full backup.

The partial backups usually go quickly enough to do daily until another full backup is necessary. The partial backups can be either incremental or differential. Incremental backups compare the backup and modification dates of each file and back up only the files with modification dates later than their backup dates. Fastback then adds the new backup to the previous backup file and updates the backup dates on the hard disk.

A differential backup does the same thing, except it doesn't change backup dates. So there's a trade-off. Although it uses additional disks, each incremental backup provides a record of the changes you've made between full backups. Differential backups don't require an increasing number of disks but, instead, keep a backup of only the latest version of your files. The manual also describes a hybrid-backup strategy consisting of differential backups on two alternating sets of disks. This approach avoids the ever-growing-number-of-disks syndrome yet gives you two backups' worth of records.

Conveniently, for both backup and restore, you can select specific files and folders by name, creation or modification date (or range of dates), application name, file type, or creator. For more flexibility, Fastback scans your hard disk and displays a list of the disk's folders before backing up or restoring files, so you can select the specific files or folders you want to include in the operation. This lets you avoid backing up files that never — or rarely — change, such as programs or permanent data files, and easily restore a file you've accidentally blown away.



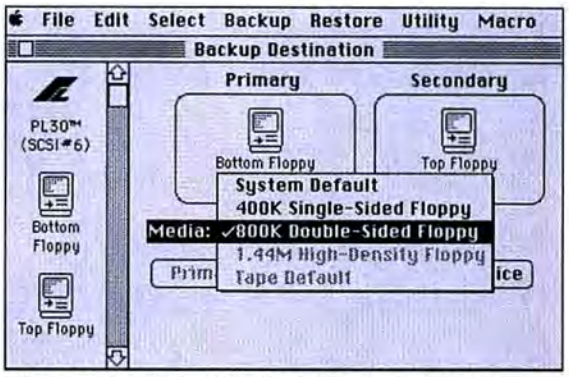
Fastback II offers a variety of backup options that you can save in configuration files for specific backup sessions.

HOW IT WORKS Restoring a 45K file I'd deleted took less than two minutes and went without a hitch. The only problems I encountered were some confusing dialog boxes. While looking for the file to restore, Fastback kept asking me if I wanted to restore all the successive folders holding the file. Because I didn't want to restore all the files in those folders, I answered "No," which caused Fastback to restore nothing. Answering "Yes" led the program to the appropriate file, without restoring the others. This situation and some other similar ones could be alleviated by better tutorials. Still, the program functions sensibly and stably enough that simply doing what seemed right in any unclear situation always worked.

Fastback offers data-compression backup options to let you save space (use maximum compression), save time (moderate compression), or do neither (no compression). The performance of these options depends on hard-disk read time, determined by disk design, the fragmentation of the disk being backed up, and the compressibility of the data. (Text and databases will compress a lot, whereas digitized sound and spreadsheets don't compress much at all.) Backing up 20.5 megabytes of data from a 30-megabyte hard disk required 30 disks and 26.5 minutes when I used the Save Time option. I found that turning compression off actually accomplished the job faster — in 23.5 minutes.

Other Fastback II features let you print labels from the menu bar, create setup files that boot the program with various setting configurations, detect bad media, create macros for executing customized procedures, and schedule automatic tape backups.

Fastback II is good, but it has quirks. Dialog boxes don't always follow Mac conventions — some don't include OK buttons but register your choices when you click on the close box, for instance — and the manual could use more detailed tutorials. The program is designed well enough that doing things intuitively usually gets you safely through even your first session.



Fifth Generation Systems' Fastback II can back up to tape or 3.5-inch disks. It keeps track of which disk is in which drive and prompts you accordingly.

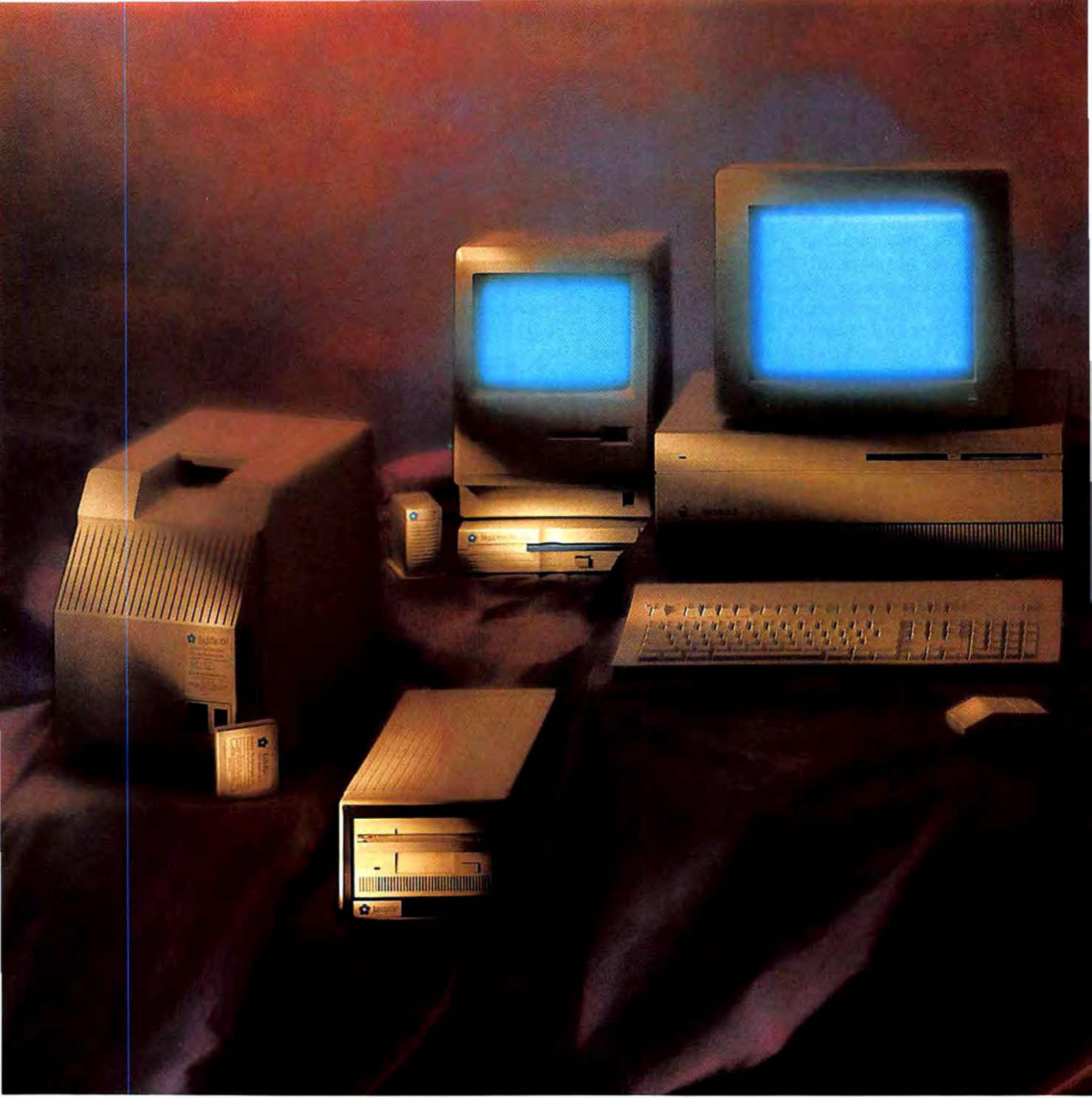
Fastback II's speed and intelligently implemented flexibility compensate for its few minor shortcomings, making backing up data fast and relatively painless. Its different partial-backup schemes save time with no loss of security and can be tailored to individual needs, and Fifth Generation Systems seems committed to support, improvements, and updates.

— Tim Tully

Get Info

Fastback II ★★★★

List Price: $189
Published by: Fifth Generation Systems, 11200 Industriplex Blvd., Baton Rouge, LA 70809; (800) 873-4384 (sales only) or (504) 291-7221.
Version: 2.0
Requires: System 4.2 or later.
Application Size: 466K
Compatibility: Mac 512KE or later.
Copy Protection: None



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We can't show you the InnerDrive, since it's already installed inside this Mac II. And since it's incredibly quiet and 33% cooler than most other drives, chances are you won't notice it even when it's running. *(Also available for the SE.)* 40/SE: $649, 40/II: $649. 80/SE: $949, 80/II: $949. 100/SE: $1099, 100/II: $1099. 140/II: $1499 *(Mac II only.)*

©1989 Jasmine Technologies, Inc. 1740 Army St. San Francisco, CA 94124. Phone 1-415-282-1111 Worldwide. FAX 1-415-648-1625. BackPac, TalkBac, DirectOptical, MegaDrive, MegaFloppy, InnerDrive, DirectDrive.



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BUSINESS ACCOUNTING

Components General Ledger

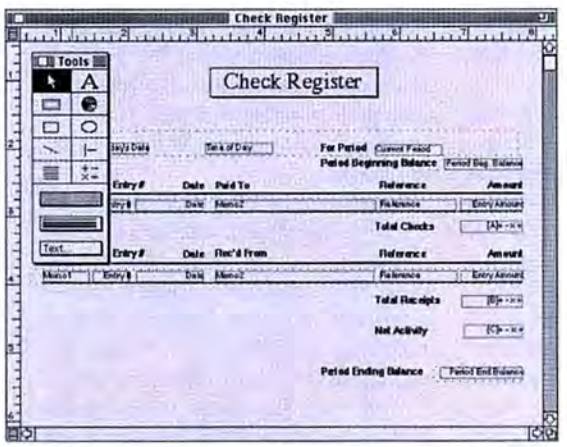
Satori's marketing strategy may be questionable, but there's no doubt that it has launched a terrific and innovative accounting series.

Is it crazy to expect a new entry in the accounting-software market to gain market share? Not if it's a good package. But is it truly crazy for a company that has a great accounting product to expect to gain market share when it's released only a general-ledger module and will release its other modules once every three months? Yes, but that's exactly what Satori Software is doing. The Satori accounting system is called the Components series. So far, the only module on the market is General Ledger.

WHAT IT IS The Components General Ledger system is extraordinary. It provides state-of-the-art flexibility, integrity, and functionality. The problem is that it's only a general ledger. But the system's back-end, or report-writing, capability is strong enough to entice you to import data into the ledger and use it with other accounting systems.

It's kind of hard to get excited about four tires, but put them on a Porsche and watch out! The same holds true for the Components General Ledger system. When Satori delivers the accounts-receivable, accounts-payable, inventory, and payroll modules, the system will really be something, and General Ledger gives a good glimpse of what the future may hold.

Components is a visual system throughout which Macintosh icons and graphic capabilities are used extensively to facilitate navigation and to showcase its special features. For example, Components is the only available accounting system I've seen that lets you pick whether you want three, four, or five digits in your account-numbering sequence. The system provides similar flexibility for accounting periods, sequence of the chart of accounts, offset entries, and almost every other conceivable option.



Satori Software's Components General Ledger is the first module in a full-featured accounting series that brings object-oriented graphics to bookkeeping. This graphics-based approach uses the tool palette shown here, which should look vaguely familiar to anyone who's ever used a draw program.

Once the Components ledger is set up and ready to run, pumping entries through is quick and easy. The program's graphic nature, which mimics a ledger-card system, makes the entry process intuitive for anyone who's ever used a manual accounting system. The comprehensiveness of the built-in journal reports makes reconciliations and balancing a snap.

If you have any trouble, you can turn to the on-line Help feature, which provides thorough descriptions of system performance. Any user can easily edit any of the Help topics to reflect special needs or setup characteristics.

Surprisingly, with all the native intelligence this program displays, Satori provides only a one-level password. Once you've entered the password, you have free run of the system. The password feature should be extended to at least three levels: entries, corrections, and system setup. General Ledger can handle multiple companies, but no consolidation feature is included. Another shortcoming is that the system runs only in single-user mode, although application files can be downloaded via a network.



Components General Ledger uses a ledger-card approach that should be familiar to most accountants, and its graphic interface should make it appealing to those for whom accounting is new territory.

The Components ledger provides fields for carrying budget information for this year as well as for the previous year, and you can produce reports that compare actual to budgeted expenses for both years. This simple management tool is effective for eyeballing where a business is in terms of revenues and expenses.

Components lets you decide whether

you want to carry forward all the details of your transactions or carry just summary information forward. Again, this is a special feature. Other systems either continually carry all your detail, which may consume massive amounts of disk storage, or automatically consolidate all the detail at a month's close. The detail can be useful for following up on payment questions in the future. In fact, for small businesses, in which the general ledger serves as an electronic filing cabinet, this feature is mandatory.

The predefined financial reports that come with Components are Trial Balance, Income Statement, Balance Sheet, and Chart of Accounts.

Using the built-in report-writing capability, you can create any report imaginable (as long as the data is stored in the general ledger) and can spruce it up with Components' graphic tools.

You design forms and reports by using Components' set of drawing tools. Each object you place in a report can be easily modified. These objects can be graphic elements, fields, data elements from the general ledger, calculations, formulas that use fields, or graphs.

Components has the most advanced report-writing capability on the market. You can do practically anything with it. Given enough time, you can create modern-art masterpieces instead of financial reports. Many users might think the report writer is an interesting but superfluous tool. It's not. The money an average business can save on forms and printer-setup times by using the Components system and a laser printer can easily pay for the package.

The Components system also provides a powerful data-filtering capability for reporting, an import capability that uses text files, and an export capability in ASCII tab-delimited files. Unfortunately, the backups are full, not incremental.

Satori's Components General Ledger is superb. The package provides mandatory functionality with a state-of-the-art report-writing system. If Satori keeps up the good work, the balance of the system will attract a large and loyal following, especially among users who come to accounting from database (or graphics) backgrounds.

— Ken Landis

Get Info

Components General Ledger $ $ $ $ $

List Price: $595
Published by: Satori Software, 2815 Second Ave., Suite 560, Seattle, WA 98121; (206) 443-0765.
Version: 1.0
Requires: System 4.1 or later.
Compatibility: All Macs with 1 megabyte.
Application Size: 550K
Copy Protection: None

UTILITIES

Anti-Virus Kit and SAM

Computer viruses are a hot topic; here are two ways to keep your Mac clean and safe.

When it comes to computer viruses, I've been lucky — so far. No infections, but I'm also real careful. I get and try every virus detector, preventer, and repairer I can find, including the free ones such as Disinfectant and last year's Eddy-winner, Vaccine.

The two newest entries in the commercial antivirus market — a burgeoning niche — are 1stAid Software's Anti-Virus Kit and Symantec's SAM (short for Symantec AntiVirus for Macintosh — easily the most awkward software title I've come across recently). Both are excellent programs, but because of its design philosophy, SAM is more powerful and more elegant than the Anti-Virus Kit. Either can protect your computer, however, and that is the goal.

THE RUNDOWN Both programs provide primary protection via an INIT. You can configure SAM Intercept to check automatically any activity that could introduce a known or unknown virus (although no program can guarantee protection from all unknown viruses). Some of the more useful checks occur every time a floppy is inserted and every time any of a definable list of resources is about to be changed.

The part of SAM that detects viruses and attempts repair is an application called SAM Virus Clinic. It can find every virus known at press time.

You should run Virus Clinic periodically in case Intercept misses something. I run it at least once a week. It's quick, scanning the executable material in a full 40-megabyte hard drive in just a minute or two. Network administrators will appreciate the nice variety of reports it can produce and print.

But SAM's greatest virtue is the degree to which you can customize just how carefully it should guard against intrusiveness. I like SAM to check each and every floppy I insert (except those requested by the Mac as part of a disk swap) and to tell me a lot about what is about to be modified. I generally click to allow an operation to proceed unimpaired — the default buttons are well chosen and virtually always what I want done. My awareness of what my Mac is doing has been heightened, however, and I've been reminded that staying free of viruses is a matter of continual vigilance. Based on the way I use my Mac, SAM is perfectly designed.

I have some problems with Anti-Virus Kit, on the other hand. Although it checks applications before they launch and checks executable code before it runs — effectively providing the same level of protection as SAM does — I don't see enough action to keep me on my toes.

Anti-Virus Kit comes in three parts: VirusGuard, a cdev that operates much like SAM's INIT; Inoculator, an application that installs a small history file on a disk to record changes on that disk; and Same/Diff, an application that helps you identify the time an infection occurred by



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182	23	1,699
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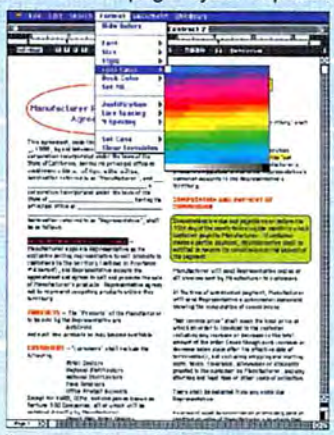
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BetaWatch

Products on the Horizon

DeltaPoint's low-priced ($99!) word processor, code-named **Taste,** may take a serious bite out of MacWrite II's market. Taste includes page-layout capabilities,



mail-merge with a built-in address book, character-based color (so you can control the character and background colors), and the same 8-bit–color drawing module available in DeltaGraph (discussed elsewhere in StartUp). All this is in addition to the standard word-processing features.

Taste, $99. DeltaPoint, 200 Heritage Harbor, Suite G, Monterey, CA 93940; (408) 648-4000. ETA: Fall 1989.

After Dark, a screen saver from Berkeley System Design, lets you choose and customize your favorite floating image, such as a night sky with meteors, raindrops, lightning bolts, crawling worms, or a scanned version of your company's logo. **outSPOKEN,** also from Berkeley System Design, is the first software to give blind and visually impaired users the capability to use most Mac programs. It uses keypad functions for cursor movement and MacinTalk to tell the user where the cursor is on-screen. out-SPOKEN pronounces whatever is under the cursor and uses beeps and clicks to identify various functions.

After Dark, $39.95; outSPOKEN, $395. Berkeley System Design, 1700 Shattuck Ave., Berkeley, CA 94709; (415) 540-5535. ETA: Summer 1989 for both.

comparing a file you suspect is infected with your archival version.

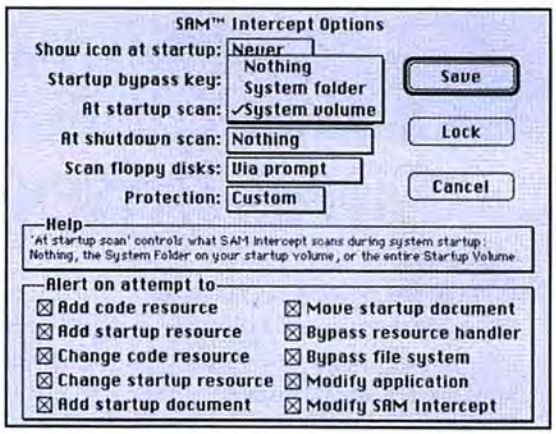
Although I know that floppies that never leave my desk have a vanishingly small chance of becoming infected, I won't accept even a slight chance when it comes to viruses. Inoculator is designed to reassure me. It writes a small file onto each disk that keeps track of any changes to the files on that disk. The problem with this system is that you have to keep reinoculating your floppies to keep that history file updated. When you don't have the application handy, you can double-click on the Inoc file, and it runs a straight yes-or-no check on the disk, telling you if anything suspicious has happened. If anything has, however, it won't tell you which files were affected. To get that information, you have to run Inoculator itself. It's probably worth the protection to go through all this, but it's still a hassle. I hope this method changes in a future upgrade — it's needed.

Anti-Virus Kit doesn't offer any repair functionality. If it finds an infected file, you must either replace the file with a clean copy (be sure to check it!) or turn to a public-domain repair program. SAM, on the other hand, can repair most files infected by known viruses. Obviously, it can't repair unknown viruses. And it can't guarantee perfect fixes — although it did fix my dozen infected test files. As the manuals for both products tell you, however, it's best to trash and replace infected files.

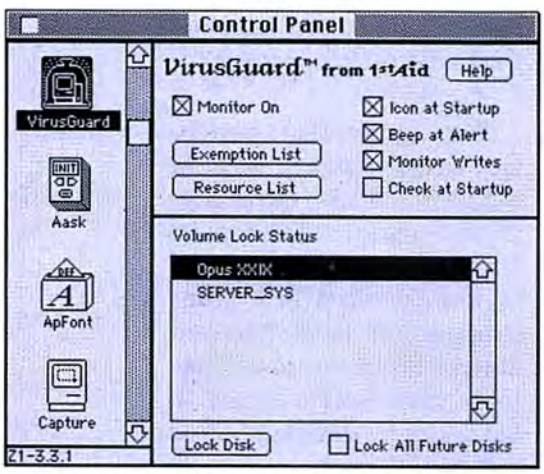
Still, I want repair capabilities. It's just possible that I don't have a backup of some crucial file, and if the master gets infected, then repair is my only hope. And I want that hope.

THE VERDICT Programs that identify and repair damage from specific viruses must be updated every time a new virus is discovered. How quickly (and cheaply) these updates are developed and provided is critical. SAM doesn't yet have a track record in this regard. The standard to match is HJC's Virex (see Quick Clicks, June '89), which has been updated promptly and at reasonable cost several times already.

SAM, learning from the trendsetting Virex plan, offers both yearly upgrade subscriptions (for $60) and one-shot upgrades for $15. If you don't plan ever



SAM (Symantec AntiVirus for Macintosh) is the top commercial antivirus package. SAM Intercept's controls appear in the Control Panel. This screen shows the configuration options. Note the extensive use of pop-up menus.



1stAid Software's Anti-Virus Kit takes an approach to virus protection that is different from SAM's but still effective. The VirusGuard controls appear when you select it in the scrolling list of options in the Control Panel.

The easiest way to learn Macintosh software is to play it by ear



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WORD PROCESSORS & DESKTOP PUBLISHING

Access Technology		Ready, Set, Go! 4.5	275.
Mind Write	95.	Letra Studio	275.
Mind Write Express	129.	LetraFonts *(Various Vol. 1-45 ea.)*	65.
Advanced Software		**Microsoft**	
DocuComp	***Special*** 89.	Microsoft Word 4.0	249.
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Showcase F/X	***Special*** 189.	Word Maker	69.
Allan Bonadio Associates		**Niles & Associates**	
Expressionist 2.0	79.	EndLink	58.
Aldus Corporation		EndNote	75.
Color Extension	175.	**Paragon Concepts**	
Aldus Persuasion	375.	Nisus	***Special*** 259.
PageMaker 3.01	389.	**Preferred Publishers**	
Ashton Tate		Vantage	***Special*** 55.
FullWrite Professional	249.	**Quark, Inc.**	
Broderbund		QuarkXPress V2.0	489.
DTP Advisor	47.	QuarkStyle	175.



DeskPaint 2.0 & ZBasic 5.0 by ZEDCOR, Inc.

DeskPaint 2.0 is a powerful desk accessory that creates, loads, edits and saves bitmap graphics including TIFF, MacPaint and PICT formats. *DeskPaint 2.0's* features include: Auto Trace, Air Brush, Distortion, perspective control and more **($65)**. ***ZBasic 5.0*** is an interactive basic compiler with all the tools needed to help serious Mac programmers create applications. *ZBasic 5.0* includes color and full toolbox support, an MSBASIC conversion utility and more **($89)**.

Caere		**Symantec**	
Omnipage	555.	More II	249.
Claris		**Symmetry**	
MacWrite II	185.	Acta Advantage	65.
Design Science		**T/Maker Company**	
Math Type 2.0	79.	WriteNow V2.0	***Special*** 109.
Emerald City		**U.S. MicroLabs**	
Smart Art I Text Effects	85.	Font Sizer	75.
Smart Art II Graphic Effects	85.	**Word Perfect Corporation**	
Smart Art III Advanced Text Effects	85.	Word Perfect	179.
Exodus		**Working Software**	
Expresswrite	65.	Lookup	30.
Letraset		Findswell	36.
Design Studio 1	459.	QuickLetter	73.



Electronic WordFinder by Microlytics

WordFinder, the smartest and smallest dictionary and thesaurus on the market today. The undisputed standard in thesaurus programs for the Macintosh, is now a portable. This handheld, battery operated unit, has a 4.5 megabyte memory with a 220,000 thesaurus and 110,000 spelling dictionary that fits in your pocket. *WordFinder* will also handle cities, states and proper names. **$59.**

NETWORKING SOFTWARE & HARDWARE

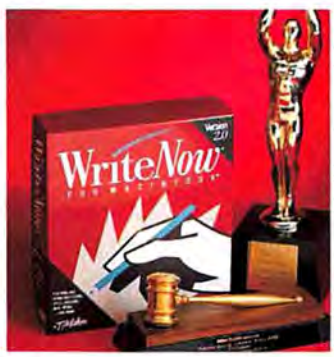
CE Software		**Nuvotech**	
Quick Mail 1-5 users	175.	TurboNet ST *(Din8 or DB9)*	30.
Quick Mail 1-10 users 2.0	259.	TurboBridge	319.
Dove		**Olduvai Software** Font Sharer	149.
FastNet III or FastNet SE	375.	**Orange Micro**	
FastNet SCSI	779.	OrangePort	209.



MacSnap Memory Boards by Dove Computer

It's a safe bet that no matter what Macintosh model you have, Dove Computer has a ***MacSnap*** memory expansion product that matches your needs. That's because Dove has an extensive line of high quality memory and productivity enhancement products available. All models listed include Dove's RamSnap software, their intelligent ram management software. We've selected some of the most popular models.

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PhoneNET AppleTalk	9.	Net Serial X232	285.
PhoneNET Din 8 or DB9	35.	Net Bridge or TeleBridge	339.
Timbuktu	65.	**Tactic Software** Clip Share	109.
TrafficWatch	129.	**TOPS**	
Timbuktu Remote	195.	Tops 2.1 Mac	145.
PhoneNET Repeater	325.	Tops Dos or Net Print	115.
PhoneNET Star Controller	1095.	Tops FlashBox	125.
LaCie Silverserver	89.	Tops Repeater	129.
Magnus		Tops FlashCard	159.
FileMagic	49.	InBox-MacConnection	45.
Microsoft		InBox-Starter Kit	149.
Microsoft Mail 1-4 users	195.	Tops Teleconnector Din8 or DB9	39.



WriteNow 2.0 by T/Maker

WriteNow 2.0 is the long-awaited update of the easy-to-use, easy-to-learn, powerful word processor from T/Maker. The features added to *WriteNow 2.0* include a 100,000 word dictionary and spelling checker, WYSIWYG multiple columns, and graphic support, an unlimited number of open documents, and count for characters, words and paragraphs, and mail merge. ... **$109.**

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MODEMS

Abaton InterFax 12/48	325.	MacCommpack *(2400SA w/Microphone & Cable)*	225.
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MacPac 2400E w/software & cable	179.	*(Software & Cable)*	215.
Best Data Products		Promodem 2400SE Int.	199.
SmartOne 2400/1200 w/software & cable	145.	Promodem 2400MII *(II, IIx, IIcx)*	269.
CMS CMS 2400BMX	179.	**Supra Corporation**	
Hayes Microcomputing		Supra Modem 2400	149.
Smartmodem 1200	295.	**U.S. Robotics**	
Smartmodem 2400M w/smartcom II	459.	Courier 1200 *(Hayes Compatible)*	199.
Practical Peripherals		Courier 2400 *(Hayes Compatible)*	335.
Practical Modem Mini 1200SA	77.	**Ven-tel**	
Practical Modem 2400SA	179.	Mac2400E *(Int. Mac II w/MS Works)*	399.



DAtabase by Preferred Publishers

DAtabase can file any type of data you create with your Mac. Color pictures, text and forms may all be stored, and they are all available at your fingertips! Perfect for people who do not require a large sophisticated database. **$69.**

DESK ACCESSORY PROGRAMS

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Casady & Greene, Inc		Smart Alarms Multi-User Appt. Diary *(9-15 users)*	199.
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CE Software DiskTop	32.	**Solutions, International** Super Glue II	62.
Deneba Software		SmartScrap & The Clipper V2.0	45.
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Icom Simulations MacKern	119.		
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LYNX Trackball by LYNX Computer

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SuperPaint 2.0 by Silicon Beach Software

Paint and Draw capabilities in one program. AutoTrace, Bezier curves, Color Preview, SuperBits (bit by bit editing at any resolution), documents up to 6 x 6 feet and free rotation. **$128.**

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StatView SE+ Graphics	225.	Microsoft Excel 2.2	249.
A.E.C. FastTrack Schedule	115.	**Nolo Press** WillMaker 3.0	32.
AEC Information Manager	409.	For the Record	29.
Ashton Tate Full Impact	249.	**Paracomp** Milo	155.
BrainPower		**Power Up** Calendar Creator	38.
ArchiText	169.	Fast Forms	***Special*** 89.
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A.C.E. *(Access Control Environment)*	Call	WallStreet Investor V3.0	449.
Chang Laboratories C.A.T.	225.	**Satori Software** Bulk Mailer 3.3	78.
MacCalc	83.	Bulk Mailer Plus	189.
Claris MacProject II	379.	**Select Micro Systems, Inc.** Exstatix	209.
Smartform Designer	299.	MapMaker	209.
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101 Macros For Excel	35.	Form Set Business Forms	52.
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Mac Schedule	115.	Mac Envelope 4.1	***Special*** 55.
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GOfer by Microlytics

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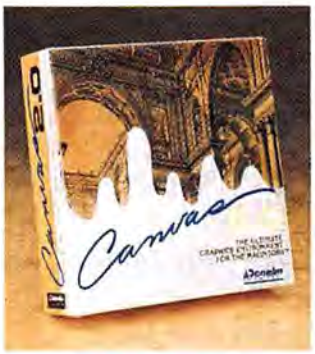
Casino Master Deluxe Version is an integrated package of five casino games in dazzling color; runs on Mac II, IIx and IIcx. Play Blackjack, Craps, Roulette, Video Poker and Baccarat. All games have mouse-controlled betting, long-term storage of wins/losses. Complete manuals include rules, strategy. Standard version has same features, runs on all Mac's with 512K. **$55.**



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Canvas 2.0 by Deneba Software

Canvas 2.0, one of the top graphics programs, includes many new features: unlimited layers, positioning to 1/64,000 inch, Bezier curves and polygons, and 16.7 million colors on the Mac II. Converts but mapped images into objects. *Canvas 2.0* rivals CAD programs. For business graphics, presentations, desktop publishing, engineering or architecture, *Canvas 2.0* helps you create. **$169.**

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HyperBible International	175.
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the Result Software	
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Smart Alarms/Multiuser by Jam Software

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The award winning ***MacBottom Hard Disk Drives*** are the perfect compliment for your hard working Macintosh. MacBottom drives are available in 45 **($789)**, 70 **($999)**, 84 **($1249)** megabyte models, platinum color and offer fast average seek times, plus high data transfer rates (up to 1500 kilobytes/second) in a low profile case. An optional internal Hayes compatible modem is also available.

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MacTilt by Ergotron

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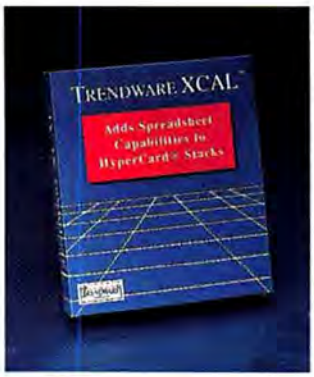
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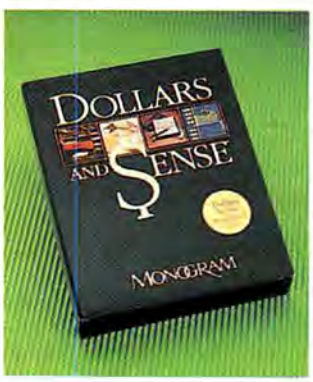
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Super Studio Session	69.	Math Rabbit	31.



Vantage by Preferred Publishers

Vantage is a powerful, special purpose text processor designed to respond to both the specialized and the mundane word processing tasks. *Vantage* can convert a wide variety of different word processing formats including Word, MacWrite and Write Now. .. **$55.**

Bright Star Technology		**Mindscape** Perfect Score SAT	
Alphabet Blocks	30.	w/The Perfect College	32.
Talking Tiles	69.	**Nordic** Body Works	28.
Broderbund Type!	19.	Clock Works	28.
Sensei Geometry, Calculus or Physics	59.	Coin Works	28.
Where in the World is Carmen SanDiego?	27.	TurboMath Facts	28.
Where in Europe is Carmen SanDiego?	30.	Earth Works	28.
Where in the USA is Carmen SanDiego?	30.	Flash Works	28.
Jam Sessions	30.	Lemonade Stand	28.
Coda Mac Drums	31.	Naval Battle	28.
Perceive	50.	PreSchool Disk 1	28.
Davidson & Associates Speed Reader II	27.	PreSchool Disk 2	28.
Math Blaster or Word Attack!	27.	Word Search	28.
Electronic Arts Mavis Beacon Typing	33.	**Primera Software**	
Deluxe Music Construction Set V2.5	84.	Different Drummer	59.
First Byte		**Simon & Schuster** Typing Tutor IV	30.
Dinosaur Discovery Kit, Puzzle		**Springboard** Top Honors	59.
Storybook or Rhyming NoteBook	27.	Family Matters or Atlas Explorer	28.



Dollars & $ense 4.1C by Monogram Software

Dollars and $ense, the complete financial management program. Balance sheet? Chart of accounts? Customized reports? Other features: Automatic double entry accounting, check printing, "what if?" bill paying, and import/export to/from most popular spreadsheets. If you'd like to make a positive financial statement or just an assessment of your personal value - let *Dollars and $ense* take charge of your finances. **$81.**

ACCESSORIES

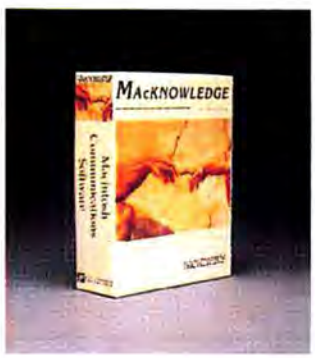
Advanced Gravis		Printer Muffler 80	43.
MouseStick *(Plus or ADB)*	85.	System Saver Mac *(Beige or Platinum)*	64.
Cutting Edge		Space Saver Printer Stand	17.
Cutting Edge MCK-105QK		Super Base	34.
Keyboard w/Quickeys	135.	System Saver SE	52.
DataDesk Hyper Dialer	24.	Masterpiece Mac II	105.
MAC-101 Keyboard/Beige		New Turbo Mouse *(Reg. or ADB)*	109.
(128k/512k & MacPlus)	***Special*** 139.	Universal Copy Stand	22.
MAC-101 ADB Keyboard/Platinum		Universal Printer Stand	15.
(Mac SE & Mac II)	***Special*** 139.	Apple Color Monitor or Full Page	
Ergotron Mousecleaner 360°	15.	Display Polarizing Filter	65.
MacTilt *(Mac, SE or II)*	***Special*** 68.	Two Page Display Polarizing Filter	135.
Muzzle SE	62.	Power Back 330	269.
Muzzle Mac II	69.	**Lynx Computer**	
Farallon MacRecorder Sound System		Turbo Trackball *(Mac & Mac+ or*	
(Mac SE or Mac II)	165.	*Mac SE & Mac II)*	***Special*** 65.



Cutting Edge 800K Drive by Cutting Edge

The ***Cutting Edge 800K*** floppy disk drive takes advantage of the newest technology to offer high speed, low noise, high reliability in a compact, stylish case. The *Cutting Edge 800K* floppy drive is compatible with all new ROM Macs including the Mac SE and Mac II. The *Cutting Edge 800K* would make an attractive addition to many Macs. **$149.**

Goldstein & Blair		**MicroSeeds** WristMac	149.
Macintosh Bible 2nd ed.	20.	WristMac Executive	199.
Impulse Audio Digitizer w/soundware	139.	**Mobius** Fanny Mac QT	
I/O Design		*(Beige or Platinum)*	60.
Mac Luggage in Navy or Plat.		**Mouse Systems** A+ Mouse *(MacPlus)*	63.
Macinware Plus Carrying Case	64.	A+ ADB Mouse *(Mac SE/Mac II)*	83.
Macinware SE Carrying Case	75.	**Moustrak** MousePad 7"x9" Size	8.
Macinware IICX Carrying Case	89.	MousePad 9"x11" Size	9.
Macinware II Carrying Case	99.	**Orange Micro** Grappler Spooler	39.
Imageware II Carrying Case	49.	Grappler C/Mac/GS or Alphabits	79.



MAcKNOWLEDGE by Prometheus

MAcKNOWLEDGE is the latest communications software available for your Mac. Icon based scripts provide instant access to all major online services with just a click of your mouse. The TAL scripting language provides all the capabilities for customizing and automating your own online sessions or the record function will watch your session and create an icon based script automatically. **$125.**

Kalmar Designs		Grappler L/Q or Grappler L/S	103.
Teakwood Roll-Top Disk Cases:		**Ribbons**	
Micro Cabinet *(holds 45 disks)*	14.	*Available in Black, Blue, Brown,*	
Double Micro Cabinet *(holds 90 disks)*	21.	*Green, Orange, Purple, Red,*	
Triple Micro Cabinet *(holds 135 disks)*	31.	*Yellow, Silver & Gold*	
Kensington		ImageWriter Ribbon	4.
Mouseway *(Mousepad)*	8.	ImageWriter Black 6-pack	20.
ImageWriter or ImageWriter II Cover	9.	ImageWriter Rainbow Pack	
Macintosh Plus/SE Dust Cover	9.	*(6 Colors)*	20.
Apple Security Kit	34.	ImageWriter II-Four Color Ribbon	9.
Antiglare Polarizing Filter	33.	ImageWriter LQ Black	17.
Mac II Stand and Cable Kit	65.	ImageWriter LQ Four Color	20.
Mac II Monitor Stand	65.	Seikosha Ribbon Black	6.
Power Tree Surge Suppressors		**Targus** Imagewriter II Carry Case Blk.	49.
(10, 20, or 50)	Call	Macintosh Plus Carry Case Blk.	59.
Printer Muffler Stand *(80 & 132)*	24.	Deluxe MacPlus-XKB Blk.	75.

30 DAY MONEY-BACK GUARANTEE ON SELECTED PRODUCTS



DocuComp by Advanced Software

DocuComp compares different versions of a word processing file or programmer's code. Frustrated with marking up hard copy? No More! *DocuComp* reports changes as minor as added commas or as major as a complete rearrangement and lists all changes by page and line number. *DocuComp* is being adopted as a standard in Fortune 500, government, writing, legal and academic circles. **$89.**

PRINTERS & DIGITIZERS

Digital Vision		Cordless 4 Button Cursor	65.
Computer Eyes-Mac	209.	**LogiTech** ScanMan	349.
Koala Technologies Corp.		**Seikosha**	
MacVision 2.0 *(Digitizer)*	219.	SP1000 *(Imagewriter comp.)*	235.
Mac Director	109.	**Summagraphics**	
Kurta		Bit Pad Plus	325.
IS ADB Tablet 8½x11	255.	**ThunderWare** ThunderScan	189.
IS ADB Tablet 12x12	385.	LightningScan	***Special*** 409.
IS ADB Tablet 12x17	625.	Mac II Power Accessory	42.



SHOWCASE F/X by Aegis

Aegis' ***SHOWCASE F/X*** is the feature packed special effects and animation system for fonts and graphics. Enhance your graphic images with powerful, unique headlines by applying styles to any Macintosh font. Distort, rotate and rescale graphic images and fonts. Create animated text, and play it back at 60 frames per second! For high impact presentations and desktop video, you can't beat Aegis' *SHOWCASE F/X*. **$189.**

SPELLING & GRAMMAR CHECKERS

Aegis Development		**Microlytics, Inc.**	
Doug Clapp's Word Tools 2nd Edition	42.	Word Finder *(Synonym Finder)*	36.
Deneba Software Big Thesaurus	59.	Electronic Word Finder	***Special*** 59.
Spelling Coach 3.0		**Sensible Software**	
Professional	***Special*** 115.	Sensible Grammar or BookEnds	53.
Electronic Arts Thunder! II	52.	**Working Software**	
Lundeen & Associates WorksPlus Spell	46.	Spellswell 2.0	45.



Nisus by Paragon Concepts

With ***Nisus***, word processing comes of age. Only *Nisus* has unlimited undos, graphics within text, recordable macros, Easy Grep, effortless indexing, footnotes/endnotes, hyphenation, 10 clipborads, automatic repagination, on-screen/printing line numbers, intelligent spell checking, plus all the search and replace power of QUED /M. And it's not just for super-users — *Nisus* needs only a Mac Plus or larger. **$259.**

UTILITY SOFTWARE

Abbott Systems, Inc.		**Loop Software** PictureBook	40.
CanOpener	65.	**Lundeen & Assoc.**	
ALSoft Master Juggler	64.	WorksPlus Command	85.
MultiDisk	49.	**Magic Software** Auto Save II	28.
Disk Express	49.	POWERICONS	39.
Font/DA Juggler Plus	42.	POWERmenus	39.
A.S.D. FileGuard	129.	**MainStay** AntiToxin or ClickPaste	59.
Berkeley System Design After Dark	25.	**Microlytics, Inc.**	
Stepping Out II	50.	GOfer	***Special*** 47.
Beyond Inc. Menu Fonts 2	28.	**Microseeds** INITPicker	27.
Borland Sidekick 2.0	68.	Redux	52.
Bravo SPAMM	49.	ScreenGems	42.
Central Point Software		**Olduvai Software** MultiClip	51.
Copy II Mac *(Includes MacTools)*	24.	Read-It! O.C.R. Personal	99.
PC Tools Deluxe Mac	45.	Read-It! O.C.R. 2.1	245.



MacMoney 3.0 by Survivor Software

MacMoney is the user-friendly money management program for the Mac at home or in business. *MacMoney* features easy point and click transaction entry. Let *MacMoney* help you solve your cash management problems today. **$59.**

CE Software		**PCPC** HFS Back-Up 3.0	54.
QuicKeys *(Macro Program)*	65.	**Peripheral Land** TurboOptimizer	25.
MockPackage Plus Utilities	32.	TurboBack	49.
Dantz Software Development		TurboCache	59.
Retrospect	155.	TurboSpool	59.
Dubl-Click		**SuperMac Software** SuperSpool 5.0	59.
Calculator Construction Set v2.0	55.	SuperLaserSpool 2.0	89.
Electronic Arts Disk Tools Plus	31.	Diskfit 1.5	***Special*** 59.
Farallon Computing		Sentinel 2.0	89.
Screen Recorder	129.	**Symantec** MacSQZ!	52.
Fifth Generation Systems Suitcase II	45.	Symantec Utilities for Mac *(S.U.M.)*	63.
FastBack II	108.	Symantec AntiVirus for Mac *(S.A.M.)*	63.
Power Station	35.	**Tactic Software** Icon-It!	39.
Pyro!	15.	**TENpointO**	
HJC Virex	55.	OpenIT!	49.
Icom Simulations On Cue	35.	**Williams & Macias** DiskFinder	27.
Ideaform		myDiskLabeler w/Color	29.
MacLabeler Plus	42.	myDiskLabeler	
Insight Development MacPrint	79.	w/LaserWriter Option	34.
Kent Marsh QuickLock	57.	StickyBusiness	89.
MacSafe or KnightWatch	87.	**XTree Company** XTree	52.



Rags to Riches '3-Packs' by Chang Labs

Rags to Riches '3-Packs' offers the user flexible reporting, batch totals for any time period, user definable accounting cycles and impressive speed. As a special bonus, if you choose a '3-Pack' before June 30, *Programs Plus* will send you an Aatrix Payroll program, absolutely FREE! **General 3-Pack** (G/L, A/R, A/P) **($285), Pro 3-Pack** (G/L, Pro. Bill., A/P) **($355), Retail 3-Pack** (G/L, Invent., A/P) **($355)**.

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PROGRAMS PLUS

PixelPaint Professional by SuperMac Software



PixelPaint Professional is the first "true-color" paint program for the Mac. It is designed to grow with you — from 8-bit to 32-bit systems. From general painting to advanced design. *PixelPaint Professional* gives you the intuitive tools to do your work easily. Use powerful features like advanced masking, fill effects, dithering, anti-aliasing and transparency control for advanced graphics effects and photographic-quality images. **$405.**

DATABASE MANAGEMENT

Acius 4th Dimension	349.	MBA Massmail	115.
4th Dimension Runtime	229.	MBA Netmail	115.
Activision		MBA Personnel	115.
Reports for Hypercard	65.	MBA Projects	115.
Focal Point & Business Class Bundle	49.	MBA Ship rec.	115.
Apple Computer HyperCard	42.	MBA Telesell	115.
Blyth Software Omnis 5	***Special*** 359.	MBA Travelog	115.



DiskFit 1.5 by SuperMac Software

Now there is no excuse for not protecting the information on your hard disk! Quickly and automatically, ***DiskFit*** performs an incremental back-up of your hard drive onto standard or high-density floppies, cartridges, tape or other hard drives. Allows you to select the type of files for back-up and finder-readable storage format lets you copy single files from the back-up media in the Finder. **$59.**

Borland Reflex Plus	185.	**Icom Simulations**	
Claris		Formulator	89.
FileMaker II	229.	**Microsoft** Microsoft File 2.0	125.
Exodus Retriever	59.	Microsoft Office *(includes Excel,*	
Fox Software FoxBase+ V2.0	255.	*Word, PowerPoint & Mail)*	499.
FoxBase+ Multi-User V2.0	355.	**Odesta** Double Helix II	339.
FoxBase+ Runtime V2.0	155.	DataDesk Professional	***Special*** 285.
Generation Four		GeoQuery	199.
Multiuser Business Administration Series:		**Preferred Publishers**	
MBA Clients	115.	DAtabase	***Special*** 69.
MBA DistList	115.	**ProVUE** Panorama	205.
MBA Docutrak	115.	**Software Discoveries**	
MBA Inventory	115.	RecordHolderPlus	65.

LightningScan by Thunderware



LightningScan is a hand-held, high resolution image scanner for the Macintosh. Its design allows fast scanning of photographs, images from books and magazines, drawings, and logos. Its speed and flexibility make it an ideal tool for all Macintosh graphic applications including desktop publishing and design. After use, the scanning unit is easily stored in any desk drawer. **$409.**

ENTERTAINMENT SOFTWARE

Access		**Microsoft**	
World Class Leader Board Golf	27.	Flight Simulator 1.02	32.
Accolade		**Miles Computing Inc.**	
Hard Ball or Mean 18	27.	Harrier Strike Mission II or	
4th & Inches	27.	The Fool's Errand	32.
Cosmic Osmo	35.	Puzzle Gallery	27.
Activision		Might and Magic	36.
Universal Military Simulator		**Mindscape**	
or Manhole	30.	Balance of Power 1990 or	
Manhole CD ROM	35.	Crossword Magic	30.
Broderbund		Deja Vu or Deja Vu II	30.
Ancient Art of War or At Sea	27.	King Of Chicago, Shadowgate	
ShufflePuck Cafe	24.	or Sioboot	30.
SimCity	29.	Defender of the Crown, Colony	
Bullseye Software		or The Uninvited	30.
Fokker Triplane Flight Simulator	29.	Captain Blood, Hostage or Gauntlet	30.
P51 Mustang or Ferrari Grand Prix	32.	**PCAI (XOR)**	
Casady & Greene, Inc.		MacGolf or Lunar Rescue	34.
Crystal Quest	25.	MacCourses	20.
Crystal Quest w/Critter Editor	41.	Road Racer	39.
Centron		Mac Golf Classics	53.
Crapsmaster, Roulettemaster		**Premier Technology**	
or BlackJack Ace	27.	Strategic Conquest Plus 2.0	35.
Pokemaster or Baccaratmaster	27.	Net Trek	35.
Casino Master	49.	**Primera**	
Casino Master *(Mac II)*	***Special*** 55.	Smash Hit Racquetball II	18.



atOnce! by Layered Inc.

atOnce! is the next generation in high-speed small business accounting. Included in one seamlessly integrated module are four full featured applications: General Ledger, Accounts Receivable w/Billing, Accounts Payable & Payroll. **$289.**

Data East		**Sierra On-Line**	
Super Hang On	27.	Space Quest or Space Quest II	29.
DataSoft		Leisure Suit Larry, Silpheed	
Time & Magik	29.	or Gold Rush	23.
Hunt for Red October	32.	Police Quest or ManHunter	29.
Discovery Software		King's Quest I, II or III	29.
Arkanoid	27.	**Silicon Beach Software**	
Electronic Arts		Airborne or Enchanted Scepters	21.
ChessMaster 2100 or Bards Tale	32.	Dark Castle or Apache Strike	32.
Chuck Yeager Flight Simulator		Beyond Dark Castle	32.
or Life & Death	32.	**Sir-Tech**	
Starfleet I	36.	Mac Wizardry	35.
One-On-One, Pinball Construction Set,		**SoftStream, Inc.**	
Seven Cities of Gold, SkyFox, or		Colour Billiards	35.
Patton vs Rommel	15.	Mac Man or Solitaire DA	23.

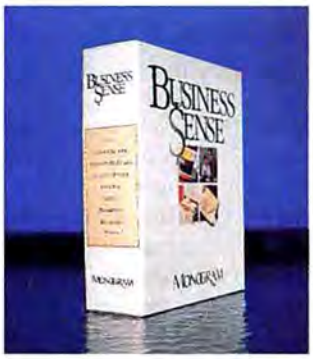


Omnis 5 by Blyth Software

Omnis 5 is a comprehensive program for developing business data management applications. It is a multiuser, multi-platform database management system for the Macintosh and IBM compatible personal computers. **$359.**

EPYX		**Sphere, Inc.**	
Sub Battle Simulator *(Mac or MacII)*	29.	Tetris	19.
Hayden Software		Tetris *(Mac II)*	24.
Sargon IV	29.	GATO, Orbiter or PT-109	26.
Hyper Press		Solitaire Royale *(SE or II)*	19.
Silver Screen	40.	Falcon 2.0	31.
Infocom		**Springboard**	
Leather Goddesses of Phobos	15.	Hidden Agenda	36.
Beyond Zork or HitchHiker's Guide	15.	**SubLogic**	
Zork Trilogy or QuaterStaff	30.	Jet	32.
Zork Zero	35.	**Toyogo, Inc.**	
Arthur or Journey	30.	Go Master	49.
MicroProse Pirates	32.	Joseki Tutor	30.

NOW OFFERS FREE TECHNICAL SUPPORT 1-800-832-3201



Business Sense by Monogram

Business Sense is serious business software for the small to medium size business. It's easy to use and hard to outgrow. General Ledger, Accounts Receivable, Accounts Payable, Payroll, Invoicing and Budgeting functions are fully integrated in one powerful package. All this power is easy to use. If your business has what it takes, *Business Sense* from Monogram can take you all the way. **$269.**

ACCOUNTING PACKAGES

Aatrix Software Aatrix TimeMinder	149.	**Dac Software** Dac-Easy Light	42.
Aatrix Payroll Plus	149.	**Dow Jones** Market Manager PLUS	189.
Aatrix Checkwriter v2.0	35.	**Intuit** Quicken V1.5	39.
Aatrix TimeCard	69.	**Layered** Insight One Write	125.
Aatrix Payroll v3.5	95.	At Once!	***Special*** 289.
Brown-Wagn MacLedgers	155.	Insight Expert INV or	
Service Industry Accounting	205.	Time Billing	***Special*** 409.
Chang Labs Rags to Riches		Insight Expert GL, AR, AP or	
Professional 3 pack	***Special*** 355.	Payroll	***Special*** 409.

Fast Forms by Power Up



Fast Forms is a powerful forms management system that lets you quickly create, customize, fill and print professional quality custom business forms. With *Fast Forms* you can fill in your forms from within the application, or use the desk accessory that it comes with to quickly access, fill in and print your forms. *Fast Forms* also includes 30 ready to use form designs to help you get started quickly. **$89.**

Rags to Riches Retail		**MECA**	
Business 3 pack	***Special*** 355.	Managing Your Money	***Special*** 125.
Rags to Riches Gen. 3-Pak 3.1		**Monogram**	
(GL/AR/AP)	***Special*** 285.	Business Sense	***Special*** 269.
Rags to Riches Inventory Control	235.	Dollars & $ense 4.1c	***Special*** 81.
Rags to Riches Professional Billing	235.	**Niles & Associates** Grant Manager	249.
Rags to Riches GL, AR, or AP	118.	**Peachtree**	
Check Mark MultiLedger	259.	Back To Basics Professional	
Payroll	189.	*(GL/AR/AP/INV)*	155.
Cash Ledger	129.	**Satori Software** Components GL	369.
Computer Associates		**Survivor Software**	
Simply Accounting	199.	MacMoney 3.0 *(Enhanced Ver.)*	***Special*** 59.



DataDesk Professional by Odesta

DataDesk Professional is the data analysis package that lets you see, explore and understand the meaning of your information. Even if you're not a computer wizard, you can use *DataDesk Professional's* icon-based point and click user interface to generate histograms, bar charts, scatter plots, box plots and rotating plots. Let *DataDesk* bring the power of statistical vision to your Macintosh. **$285.**



Managing Your Money by MECA

With ***Managing Your Money***, you can write, print checks, set up a personal budget, estimate your taxes, set up a retirement plan, manage an investment portfolio, and calculate your net worth. **$125.**

COMMUNICATION SOFTWARE

Compuserve		**Insigna** SoftPC	245.
Compuserve Starter Kit	24.	**Prometheus**	
Compuserve Navigator	45.	MAcKNOWLEDGE	***Special*** 125.
DataViz MacLink Plus/Translator	105.	**Meta Comet**	
MacLink Plus with Cable	125.	Accu-Weather Forecaster	***Special*** 58.
Dow Jones		**Software Ventures**	
News/Retrieval Membership Pack	24.	Microphone II v3.0	219.
Desktop Express	95.	**Solutions, International** BackFax	125.
Freesoft Red Ryder V10.3	52.	**Synergy Software** VersaTerm	89.
Hayes Smartcom II 3.1	88.	VersaTerm-Pro	175.
Infosphere Liaison	175.	**Traveling Software** LAP-LINK	82.

ADOBE FONTS

#1 Palatino	125.	#33 Stencil, Hobo, Brush	95.	#65 Peignot	95.
#2 ITC Bookman	125.	#34 Aachen/Revue/		#66 New Calendonia	239.
#3 ITC Zaph Chancery	95.	Univ	125.	#67 ITC Clearface	239.
#4 ITC Avant Garde	125.	#35 Carta	63.	#68 Americana	125.
#5 New Century Sch/Bk	125.	#36 Lucida	129.	#69 ITC Serif Gothic	179.
#6 Optima	125.	#37 Univers	239.	#70 Century Expanded	95.
#7 ITC Souvenir	125.	#38 Univers Condensed	179.	#71 Serifa	179.
#8 ITC Lubalin Graph	125.	#39 Futura 1	179.	#72 Caslon Open Face	63.
#9 ITC Garamond	125.	#40 Stone Serif	179.	#73 Frutiger	239.
#10 ITC American Type	95.	#41 Stone Sans	179.	#74 Centennial	239.
#11 ITC Benguiat	125.	#42 Stone Informal	179.	#75 Stempel Garamond	125.
#12 Glypha	125.	#43 Corona	95.	#76 Weis	125.
#13 Helvetica Light/Bl.	125.	#44 Eurostile	179.	#77 Garamond 3	125.
#14 Helvitica		#45 Excelsior	95.	#78 Universal News	
Condensed	239.	#46 Futura 2	179.	w/Commercial Pi	95.
#15 Trump Mediaeval	125.	#47 Futura Condensed	239.	#79 Avenir 1	179.
#16 Melior	125.	#48 Lucida Sans	125.	#80 Avenir 2	179.
#17 ITC Galliard	125.	#49 Memphis	239.	#81 Bauhaus	125.
#18 ITC New Baskerville	125.	#50 Helvetica Compress	95.	#82 Antique Olive	125.
#19 ITC Korinna	125.	#51 Italia	95.	#83 Life	95.
#20 Goudy Old Style	125.	#52 Belwe	125.	#84 Concord	125.
#21 Sonata	63.	#53 Caslon	125.	#85 Gothic 13/Tempo	95.
#22 Century Old Stlye	95.	#54 Goudy 2	95.	#86 Cochin	125.
#23 ITC Franklin Gothic	179.	#55 Janson Text	125.	#87 ITC Bauhaus	125.
#24 ITC Cheltenham	125.	#56 Eras	179.	#88 Sabon	125.
#25 Park Avenue	63.	#57 ITC Kabel	125.	#89 Hiroshige	239.
#26 Bodoni	125.	#58 OCR A&B, Micr	95.	#90 Arnold Bocklin	125.
#27 Letter Gothic	125.	#59 Helvetica 1	125.	#91 Dom Casual	95.
#28 Pristige Elite	125.	#60 Helvetica 2	179.	#92 Post Antiqua	95.
#29 Orator	95.	#61 Helvetica 3	179.	#93 Folio	125.
#30 News Gothic	125.	#62 Times Ten	125.	#94 Linoscript	95.
#31 ITC Tiffany	179.	#63 Kaufmann	95.	#95 Vag Rounded	125.
#32 Cooper Black	95.	#64 Clarendon	95.		



Accu-Weather Forecaster by Meta Comet

Accu-Weather Forecaster gives you up-to-the-minute weather maps, graphs and forecasts. Uses a modem to tap directly into Accu-Weather, the nation's #1 private weather service. **$58.**

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Please circle 62 on reader service card.

to use the repair facilities, you don't need to buy the subscription, although you should upgrade periodically because the program is sure to improve.

As Anti-Virus Kit is directed at the mechanisms by which viruses work and not at specific viruses, 1stAid Software claims this type of continual upgrading isn't necessary.

The SAM manual is much better than the Anti-Virus Kit manual. Its level of detail and complexity seems perfectly suited to the technical level of most SAM users. It has a good balance of technicality and reassurance. The Anti-Virus Kit manual isn't bad — it's just that the SAM manual is truly excellent. The Anti-Virus Kit manual is aimed at more technically adept users.

Of the commercial antivirus packages, SAM is now tops. All of them get the job done, but SAM does it with an especially high level of simplicity and elegance.

— Steven Bobker

Get Info

Anti-Virus Kit ★★★½

List Price: $79.95
Published by: 1stAid Software, 42 Radnor Road, Boston, MA 02135; (617) 783-7118.
Version: 1.0
Requires: System 4.1 or later.
Compatibility: 512KE or later.
Application Size: VirusGuard, 36K; VirusGuard-S, 22K (a smaller version of VirusGuard for floppy-based systems); Inoculator, 20K; Same/Diff, 21K.
Copy Protection: None

SAM ★★★★★

List Price: $99.95
Published by: Symantec, 10201 Torre Ave., Cupertino, CA 95014; (408) 253-9600.
Version: 1.0
Requires: System 4.2 and Finder 6.0 or later.
Compatibility: 512KE or later.
Application Size: Virus Clinic, 62K; Intercept, 68K.
Copy Protection: None

WORD PROCESSING

Thunder II

This major upgrade to Thunder! adds Control Panel configurability to a fast, top-notch spelling checker.

Chances are good that the word processor you're currently using already includes a spelling checker. So why should you buy a stand-alone spelling checker? This is the dilemma faced by the creators of Thunder II, a major upgrade of the popular Thunder! program from Electronic Arts.

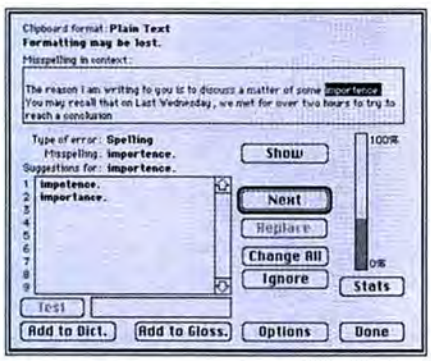
But MacWrite II does not have a glossary function. Thunder II does. WriteNow can't check for spelling errors as you type. Thunder II can. Acta Advantage has no spelling checker at all. Thunder II can give it one. Thunder II can also eliminate the need to maintain separate dictionaries for each application that uses a spelling checker. So there are some compelling reasons to get a stand-alone spelling checker, and Thunder II should be the first one you consider. It remains a standard for combining useful features with ease of use.



Thunder II is a major upgrade to Thunder!, Electronic Arts' popular spelling checker. This window appears when you're making corrections in Thunder II's Interactive mode. Pressing the appropriate numeric key substitutes the suggested word for the misspelled one.

WHAT IT IS The most obvious difference between Thunder II and its earlier versions is that it's now a cdev/INIT rather than a DA, so Thunder II is automatically launched at startup. You select the dictionaries to be loaded and the applications with which Thunder II should run from the Control Panel. From then on, Thunder II opens automatically, adding its own menu to the menu bar whenever a designated application is launched and making it appear to be integrated into each application.

Thunder II operates in either Interactive or Check Selection mode. When used interactively, it checks your typing and beeps whenever it detects a mistake. With a minimum number of keystrokes, it then suggests corrections and corrects mistakes. It automatically backspaces to the error, no matter how much more you've typed, makes the correction, and returns the cursor to its original position. Thunder II checks for four separate categories of errors (spelling, punctuation, capitalization, and double-word errors) and can be set to make a different beep sound for each type of error. But be careful not to use Thunder II's interactive mode when a program's built-in interactive spelling checker is also on because your system will almost certainly crash.



This window appears when you're making corrections in Thunder II's Check Selection mode. In this mode, you can make a global replacement using Change All. Selecting Stats produces a word count of the selection and information on the passage's level of difficulty.

The Check Selection mode operates

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similarly, but the checking is done all at once when you've finished typing. In this mode, you can also generate statistics about the selection, including a word count and the level of linguistic complexity of the selected passage. In earlier versions of Thunder!, font and style formats were often lost when changes were pasted back into a document. Thunder II now includes numerous application-specific "compatibility modules" (such as for Word and WriteNow) that solve this problem. Thunder II doesn't work with everything, but it comes close.

HOW IT WORKS Thunder II doesn't stop with the basics. With its editable glossary dictionary, often-used phrases can be abbreviated and stored for recall with just a few keystrokes (NYT for *New York Times*, for example). Special glossary functions can even paste in the current time and date. You can also create a special search-and-replace list to make a series of replacements in one quick pass through your finished document. When you're adding new words to a dictionary, Thunder II provides an extensive checklist of variants on the word (such as the plural, past-tense, and possessive forms) to be added. Finally, Thunder II is fast; suggested alternatives pop up as fast as, or faster than, with any other spelling checker I've used, and replacements are made virtually instantaneously. Despite all these features, Thunder II remains a space saver — the program and dictionaries combined take up only 340K.

Thunder II has no significant drawbacks. My only minor criticism is that it does not automatically provide an editable display of a misspelled word. If you wish to make a correction other than using an alternative it suggests, you have to reenter the word completely.

If you're satisfied with your word processor's built-in spelling checker and have little need for one in other applications, then Thunder II is probably an unnecessary luxury; otherwise, it is an excellent value.

— Ted Landau

Get Info

Thunder II ★★★★½
List Price: $79.95
Published by: Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404; (415) 571-7171.
Version: 1.0
Requires: System 5.0 or later.
Compatibility: All Macs with 1 megabyte.
Application Size: Program, 162K; large dictionary, 175K.
Copy Protection: None

GRAPHICS

Cricket Paint

Cricket's latest graphics effort has some intriguing tools, but it's still not the pick of the palette.

Not too long ago, MacPaint was the nonpareil of Mac graphic programs. Since then, color packages such as Canvas 2.0 and Studio/8 have moved to the top. But there are still a lot of black-and-white Macs around, so there's a lot of interest in monochrome paint programs — witness the recent releases of SuperPaint 2.0 (only nominally a color program) and Studio/1. With this in mind, Cricket Software has released Cricket Paint, a monochrome paint program with a few new tricks.

WHAT IT IS Cricket Paint offers much the same functionality we've come to expect from MacPaint, but it does sport some new ideas. FreshPaint is the best of these. Until you click outside a newly drawn object, the paint remains "wet," and you can edit or move it using standard draw techniques — you can resize the image or choose a different fill pattern or line width. Clicking outside the object "dries" the paint, for editing with standard paint methods.

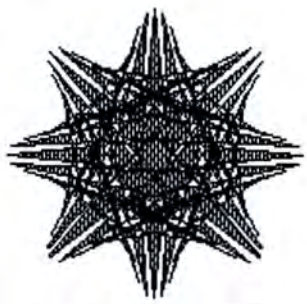
Cricket Paint creates documents at seven resolutions ranging from 72 to 300 dots per inch (dpi), on pages of 8 x 10 inches through tabloid size. It saves them in MacPaint, PICT, TIFF, or its own format. Resolutions greater than 72 dpi or pages larger than 8 x 10 inches require a hard disk or RAM buffer. RAM buffers are faster, but Cricket Paint requires 1 megabyte just to open, which may rule its use out for some people.

Cricket Paint uses two palettes and a painting window. The tool palette contains the usual paint tools plus several special ones. The pattern palette is for selecting line widths and fill patterns.

All the tools are responsive, except for the Paint Bucket, which is painfully slow. The Regular Polygon tool draws equilateral polygons with up to 16 sides. Another tool lets you draw nested polygons (you choose the number of repeats and their spacing). Shapes are drawn either from the center or the corner.

The Smooth Polygon, although similar to a standard polygon tool that draws a shape from specified vertices, makes objects with rounded corners rather than pointed ones. The Rotated Polygon repeats and rotates the finished shape, creating a complex pattern. You can control the number of repeats and degrees of rotation, as well as the fill pattern. The Spyro Polygon draws Spirograph-like patterns.

The Block tool draws 3-D boxes that



A Spyro Polygon

change perspective as you drag them around the screen, and the Background Lines tool draws parallel lines across a page. The Ellipse and Reshaping Ellipse are similar, but dragging the handles of an object created with the latter affects only an area near that handle rather than the whole object, permitting unusual

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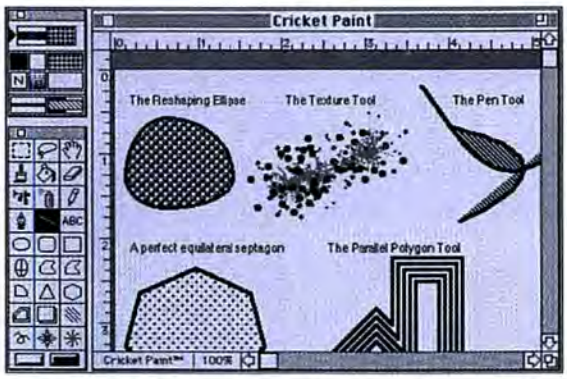
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shapes. The Freehand tool automatically smooths freehand shapes, and the Pen is similar to a Bezier-curve tool but without a Bezier tool's extensive manipulation capabilities. The Texture tool is like the familiar Spray Can but paints two selectable patterns (or shades of gray) simultaneously, creating the impression of a texture. It's an interesting effect. Each document can also have 18 custom tools that can be Texture tool settings or bit-mapped or FreshPaint shapes you've created for other graphics.



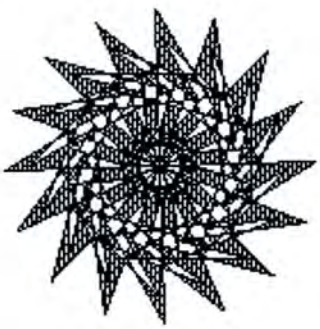
The Cricket Paint window shown here features the pattern palette (upper left), the tool palette (lower left), and the painting window.

Text handling is not standard. Clicking on the text cursor in the painting window brings up a new window in which you type text. Pop-up menus provide font, size, and style choices, and the text can be made to appear in the currently selected pattern. There is no Edit menu, so you must use the keyboard command equivalents to cut, copy, or paste. Clicking on the OK button places your finished text in the painting window as a FreshPaint object. Unlike with most paint applications, you can mix fonts, sizes, and styles within the text block.

HOW IT WORKS Cricket Paint is a well-thought-out application, and FreshPaint gives it the best of both object-oriented and bit-mapped applications. The tools are familiar and make complex shapes easy to draw. But accessing the required disk or memory buffer for page sizes larger than 8 x 10 inches or resolutions greater than 72 dpi makes it slow. The Paint Bucket tool is also extremely slow. Dealing with an extra dialog box for handling text is clumsy, and the Free Rotate command works only on certain FreshPaint objects and not on bit-mapped selections.

I can't understand why Cricket has chosen to introduce yet another incompatible proprietary file format. SuperPaint 2.0, for example, is a similar program, but its native format is PICT. But the final blow is the 1-megabyte minimum-memory requirement. Canvas, which provides comprehensive bit-mapped and object-oriented graphics capabilities in full color, requires less RAM. Cricket Paint is better than MacPaint or DeskPaint, but even with its special tools, it isn't special enough to rate it above Canvas 2.0 or SuperPaint 2.0, which also offer color at only slightly higher prices.

— Darryl Lewis



A Rotated Polygon

Get Info

Cricket Paint ★★★½
List Price: $195
Published by: Cricket Software, Great Valley Corporate Center, 40 Valley Stream Parkway, Malvern, PA 19355; (215) 251-9890.
Version: 1.0
Requires: System 6.0 or later.
Compatibility: Mac Plus or later.
Application Size: 318K
Copy Protection: None

GRAPHICS

Smart Art

Even with its limitations, this PostScript-effects DA may be the tool you need to cap your DTP projects.

Smart Art, the latest PostScript utility from Emerald City Software, is a quirky hybrid. It offers textual effects that place it in competition with products like LetraStudio, but it also has features that enhance the use of EPSF files. Whatever its true nature, you'll find it useful. Just be sure to have a PostScript printer handy — Smart Art needs one to do its stuff.

WHAT IT IS Smart Art is a DA that comes with 15 "Effects" files of textual shenanigans, which are easily customizable. The program is so intuitive that you may never open the manual. When you select Smart Art from the Apple menu, a dialog box prompts you for an Effects or EPSF file (it can be a graphic or ASCII text). If the file you select has a PICT representation stored with it, a reduced view appears in a small window.

If you open an Effects file, Smart Art displays the graphic in the main window with a list of controls down the left side that let you customize the effect to suit your fancy. You can enter new text; change the typeface; and adjust the gray level, angle, radius, or shadow length — depending on the effect selected. The controls are clever and idiot-proof. Unfortunately, you can enter only one line of text. The flip side is that you can specify any PostScript font — a clear advantage over LetraStudio's approach.

To see how the customized effect will look when it's printed, click on the Reimage button. Like its big brother LaserTalk, Smart Art uses the PostScript interpreter inside a laser printer to create screen images for its EPSF files. Reimaging can take several minutes for certain effects, especially if you're sharing the printer

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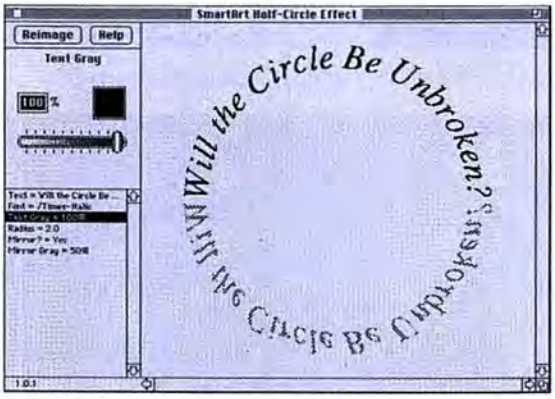
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over a network. A useless alert box warns you of this only after you've waited through most of the reimaging process. (Network note: Smart Art doesn't work at all with a print spooler.)

Actually, you don't need a PostScript printer to manipulate Smart Art's images. The printer is necessary only to update the screen image. If you can work blind, you can save changes without reimaging and export the resulting images to other programs. They are displayed as featureless rectangles, but they print perfectly on a PostScript printer.



Smart Art is a handy DA that creates special effects with PostScript type and graphics. It's bundled with 15 typographic tricks, such as the Half-Circle Effect shown here. The six lines of text at left are clickable controls that let you customize the effect, making this full circle easy.

Unfortunately, Smart Art doesn't let you print from within the program, so you have to place the image into another program to obtain a printed proof. To save your customized text, be sure to do a Save As. Alas, it's extremely easy to choose Save instead, which overwrites the original file. Since the Effects are actually templates, they should act like templates and open as untitled copies.

HOW IT WORKS How good are the text effects? Well, to be blunt, they disappointed me. Top-notch PostScript designers such as Bill Woodruff are credited with the 15 effects, but they're generally ho-hum, stock PostScript tricks that have been available from day 1. The choices include Angled, Faded, Raised, Shadow, Distance, Half Circle, Rotated, Drop Shadow, and Movie Title (à la *Star Wars*). LaserF/X, an earlier and extremely popular text-effects program, provided a more imaginative selection.

But type customization is only one facet of Smart Art. It also enables you to place EPSF graphics into applications that don't normally accept this format, such as Word 4.0 and MacWrite II. Although comparisons with LetraStudio and Broderbund's upcoming TypeStyler have already surfaced, that approach (and the expectations it entails) really misses the boat. Smart Art is not just a text manipulator. Future Effects volumes will include graphics with customizable

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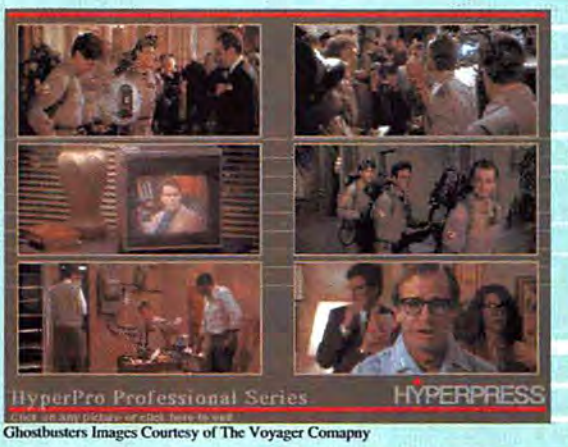
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Multimedia & Hypermedia Exposition

SAN FRANCISCO — Apple may have been the first to make *multimedia* a buzzword, but at the Multimedia & Hypermedia Exposition, Apple wasn't the only company on the bandwagon. Vendors ranged from the usual suspects — such as MacroMind, Owl, Bright Star, and Silicon Beach — to manufacturers of Mac cables and cases. Although IBM's DVI (Digital Video Interactive) demonstration was impressive, the most impressive item was a Mac product.

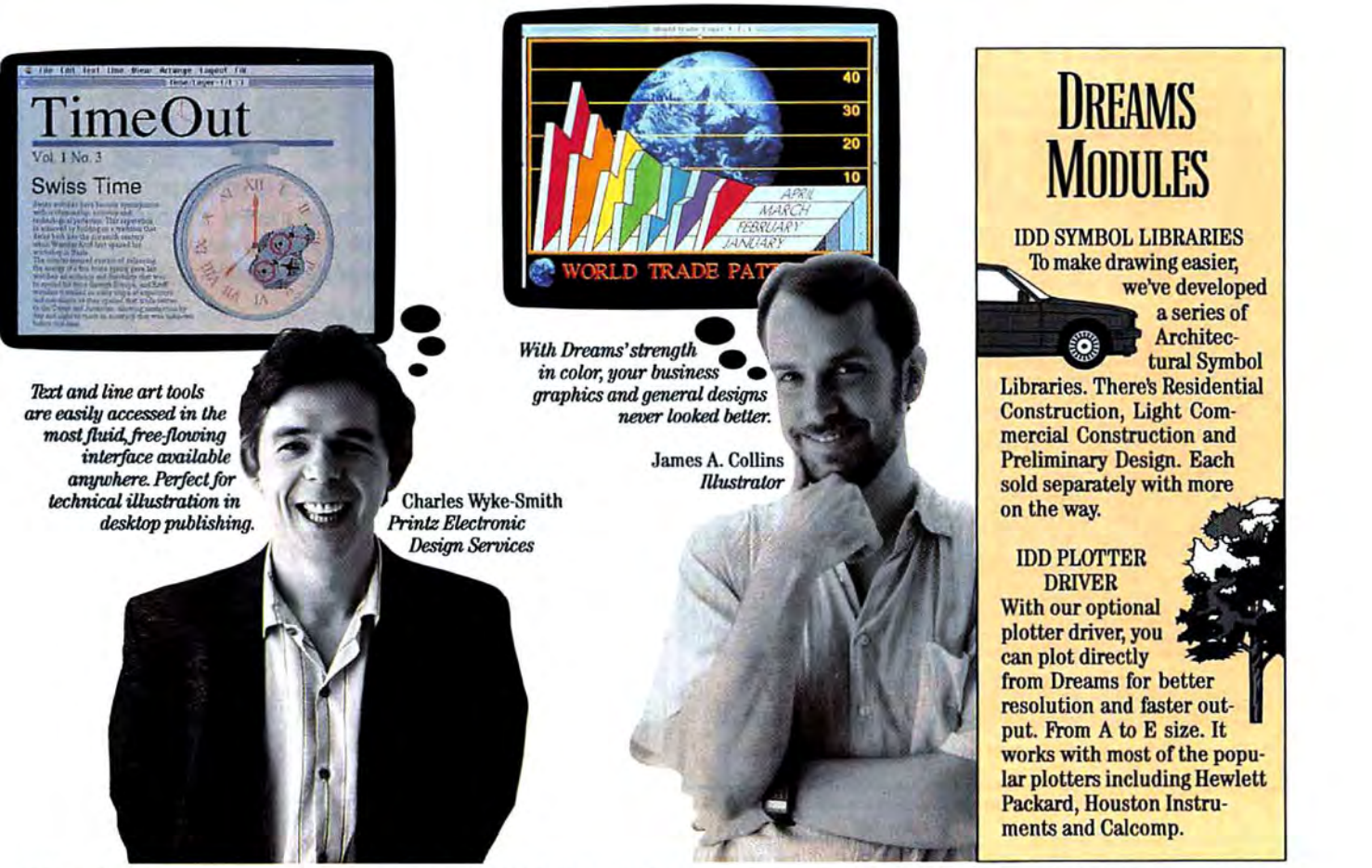
Hyperpress Publishing was demonstrating a beta version of BigTime TV. Written entirely in HyperTalk and using XFCNs, BigTime TV, used with a video-digitizing board such as Orange Micro's Personal Vision, permits live-video and Mac windows to appear simultaneously on the same screen, so you can control and view a video source from your Mac display. BigTime TV supports multiple windows with different video images, special effects, and window movement in windows of up to a full screen in size. Although



Ghostbusters Images Courtesy of The Voyager Company

the applications for BigTime TV may not be immediately obvious (beyond, as one participant put it, "Watching Hogan's Heroes while you're in Word 4"), the publisher sees tremendous potential for use in presentations and training.

IBM's display was nearly as interesting, but one of the stations was using a PC clone for the demo. Now that's multimedia!



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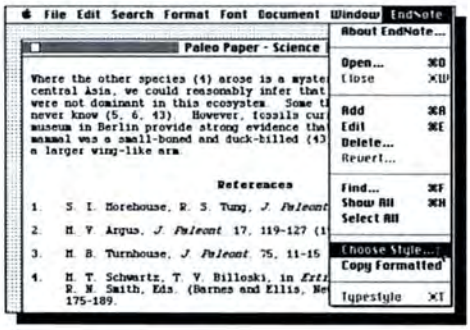
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A variety of new and generally much better keyboards will soon be available. The ergonomically nice Tony! keyboard that's been reported on here will become readily available both from the manufacturer and from a major Silicon Valley computer company. The Tony! won't be alone. Several other radical-design keyboards will be available.

One of the more interesting units is a European-designed chording keyboard. It's a small unit with five large blank keys arranged to fit the shape of the average right hand (we hear that left-hand models are also available but haven't seen any). The chording keyboard is "played" with one hand with different key combinations producing different letters and numbers. Learning to play the model we saw was easy, with the most inept in the test group taking just over an hour to master it.

The keyboard has an infrared link to one of the Mac's ADB ports (the receiver is on a flexible stalk and can be aimed), so you can easily walk around a lab entering data and observations. In addition to the chording keys, the unit has a small but complete selection of cursor-control and function keys to the left of the chording keys. It appears that this 10-ounce (including the battery) keyboard can do everything the Apple Extended Keyboard can. It should be available in time to be a stocking stuffer this year. The price will be less than $150.

Look for a new small-screen Mac. By small screen, we mean a roughly 5-inch screen (measured diagonally). This small, sturdy package, with its built-in 2.5-inch Sony 20-megabyte hard-disk drive, is intended to be a built-in module in stores and other places. It will never be sold as a stand-alone unit; it is designed to be integrated into other manufacturers' products. The only planned option is the power supply, which in most cases won't be needed.

The next wave of super word processors is about to hit. From what we've seen, FullWrite Professional 2.0, Nisus 2, and WordPerfect 2.0 will all surge past Word 4.0, and sales will start to even out among the four leaders. The midevel word processors will remain stuck in place and see their market slip away because at least one of the big four (and possibly more) plans some shockingly low pricing for the upcoming new products.

Heard any good rumors recently? Started any yourself that you'd like to take credit for? Can you share your "knowledge" with us? Does your legal department agree? Will you share anyway? If we use your rumor, we'll send you a token of our appreciation and promise not to use your name. Anonymous contributions are also accepted.

Our U.S. Mail address is Rumor Manager, c/o *MacUser*, 950 Tower Lane, 18th Floor, Foster City, CA 94404. Our electronic addresses are MacUser (on MCI Mail), 74206,204 (on CompuServe), and MacUser.Edit (on AppleLink). No calls, please; the Rumor Manager has an unlisted number and much prefers it that way.

gradient fills and the like, and there are plans for at least one more text collection, which will include pair-kerning controls.

Smart Art opens any EPSF graphic, not just its Effects files. The processed images can be imported by layout programs, or you can copy and paste them into word processors such as MacWrite II. This is where Smart Art really makes a difference. When you paste an image, the PostScript code is slyly embedded within the PICT resource. Thus, when you print the document, the graphic is printed as EPSF. If you have a large collection of EPSF clip art that you've always wanted to use in Word or MacWrite, now you can.

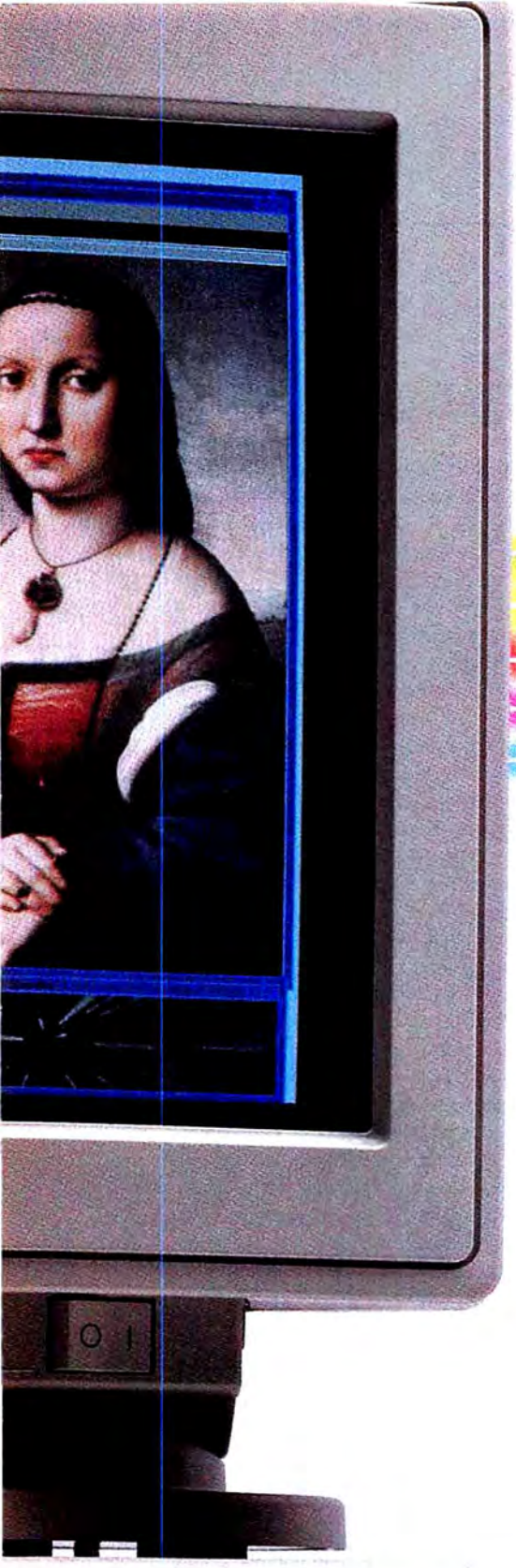
Another handy use of Smart Art is unmentioned and apparently didn't occur even to its developers. If you're in a program such as PageMaker and want to select a graphic from a collection of EPSF clip art, finding the file you want can be a hassle — it's hard to remember what they all look like. But it's a breeze to flip through them via Smart Art's Open dialog box with its preview window.

Smart Art is a nifty PostScript utility aimed primarily at mainstream Mac users. Unlike LetraStudio, which presupposes some design skills for effective use, Smart Art is simple and foolproof. Its collection of text effects is less than inspiring, but don't dismiss this program. With its ability to insert EPSF graphics into previously hostile pages, Smart Art might still prove a boon companion in your desktop-publishing endeavors.

— Gregory Wasson

Get Info

Smart Art ★★★½
List Price: $149.95
Published by: Emerald City Software, 800 Menlo Ave., Suite 102, Menlo Park, CA 94025; (415) 324-8080.
Version: 1.0.1
Requires: PostScript printer.
Compatibility: All Macs with 1 megabyte.
Application Size: 126K
Copy Protection: None



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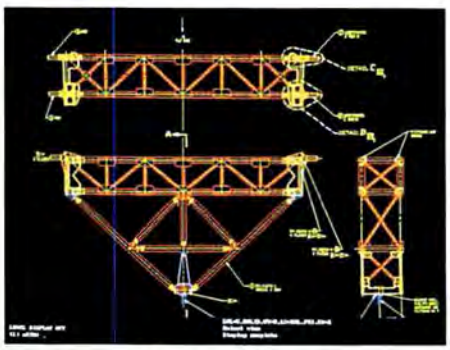
How MicroStation works for Teledyne Brown Engineering

Teledyne Brown, an Intergraph customer, is the payload mission integration contractor for George C. Marshall Space Flight Center. Teledyne Brown ensures the successful integration of scientific experiments with the space shuttle orbiter and the Spacelab module, including subsystems.

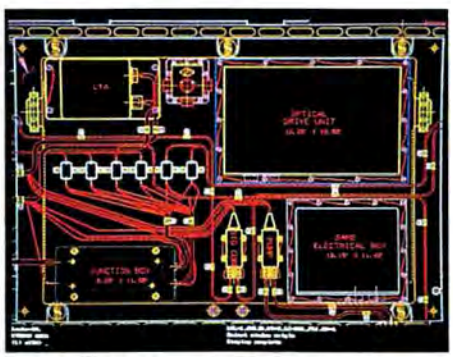
The compatibility of MicroStation PC with Intergraph's other software offerings allows Teledyne Brown to transfer projects in various stages between the VAX and MicroStation until payload integration is complete.



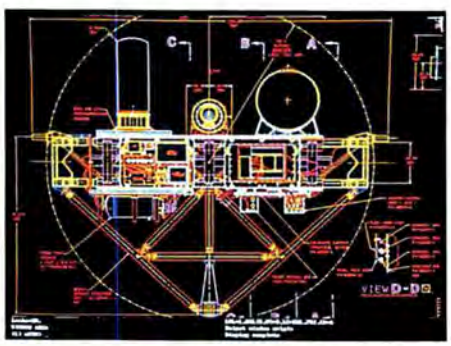
Completed MSL payload on shuttle, shown on an Intergraph VAX 252



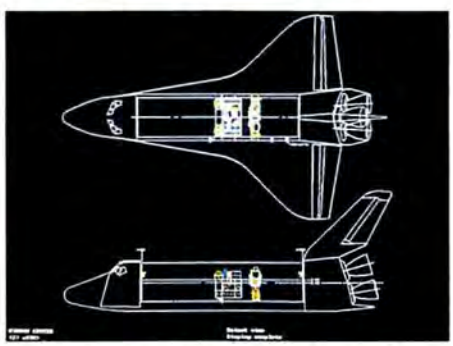
Multi-Purpose Experiment Support Structure (MPESS) carries a wide variety of scientific experiments into space.



Detail of MSL, shown on MicroStation PC



Materials Science Laboratory (MSL), attached to the support structure, shown on MicroStation PC



MSL payload in position on the shuttle, shown in 2D on MicroStation PC

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Digital Palettes



PHOTOGRAPHY: TOM UPTON

As any computer artist will tell you, having good tools a mouse click away is an immense help in creating what you envision. Programs with *great* tools present new possibilities and invite you to extend your imagination. But it's not enough to merely load a painting program with features. An artist will readily trade away some esoteric powers in return for predictability and ease of use. It's better to manually synthesize one or two special effects than to wrestle with some "powerful" program that can work miracles but handles like a garbage truck.

That said, the choice of a painting program is largely subjective, and the interface is of supreme importance. You can't clamp a paint application to a workbench and stick probes into it, and neither should you depend on one person's subjective judgment. But when you add enough perceptions together, trends begin to show.

By Salvatore Parascandolo

With that premise, *MacUser* enlisted four art students at the Art Center College of Design in Pasadena, California, to help compare five Mac 8-bit–color paint programs. Each student was asked to re-create a conventionally painted image with each program. Our testers came face to face with the best and worst in each program. After the paint dried, we had a collection of comments and a patchwork of images indicative both of the talents of each student and of the artistic muscle of each program. Here are the results.

Which 8-bit–color program can make you a Pixel Picasso or a Macintosh Michelangelo?

Cricket Color Paint



Marcie preferred to use Cricket Color Paint's dithered color blends. She softened these in spots, using the program's excellent brush in the Blend mode.



Rom customized his palette, mostly with useful gradients, which he used throughout. He used Cricket's nicely workable brush-blending talent to detail the clouds.



Teddy used solid colors and a few blends, relying on careful brush strokes to achieve most of his color transitions. He used a rainbow palette with some customized colors.



Thomas made extensive use of Cricket Color Paint's capability to customize color palettes and used transitions in almost every element of the art to achieve depth.

Cricket Color Paint

Cricket Color Paint's toolbox has adequate basic painting tools, a few award winners, and lots of . . . gadgets. Granted, these are nicely implemented gadgets that you can use occasionally and are fun to watch, but I'd trade them all for more tools that made color painting easier.

Its color management is medium-powered, with options for creating custom color blends from a range of selected palette colors and the ability to precisely edit a single color. You can import and save custom palettes. There's no option to darken or lighten, or to cool or warm, an entire range of colors. Again, there are lots of options, but they stop short of *power*.

The program's fill effects are responsive. You can choose a palette-step blend or a dithered blend. The fill directions, however, are severely limited to horizontal and vertical directions, circular burst, and rectangular burst. There's no diagonal or free-form directional mode. Ouch.

Cricket Color Paint's best feature by far is its ability to create FreshPaint objects. When you draw with many of the program's basic tools, the resultant floating object can be resized, moved, refilled, rotated (some), or reshaped (some) before you "dry" it. This benefit applies to most of the primitives (including the freehand tool, which creates a line that you can reshape).

The FreshPaint object you create with any of Cricket Color Paint's customizable tools can be saved as a tool in a special palette — you can even design an icon for it. Selections can also be saved as custom tools as long as their area is no more than about 6 square inches (1 x 6, 2.5 x 2.5, or 2 x 3 inches, for example). Up to 18 custom tools and selections can be saved with a document.

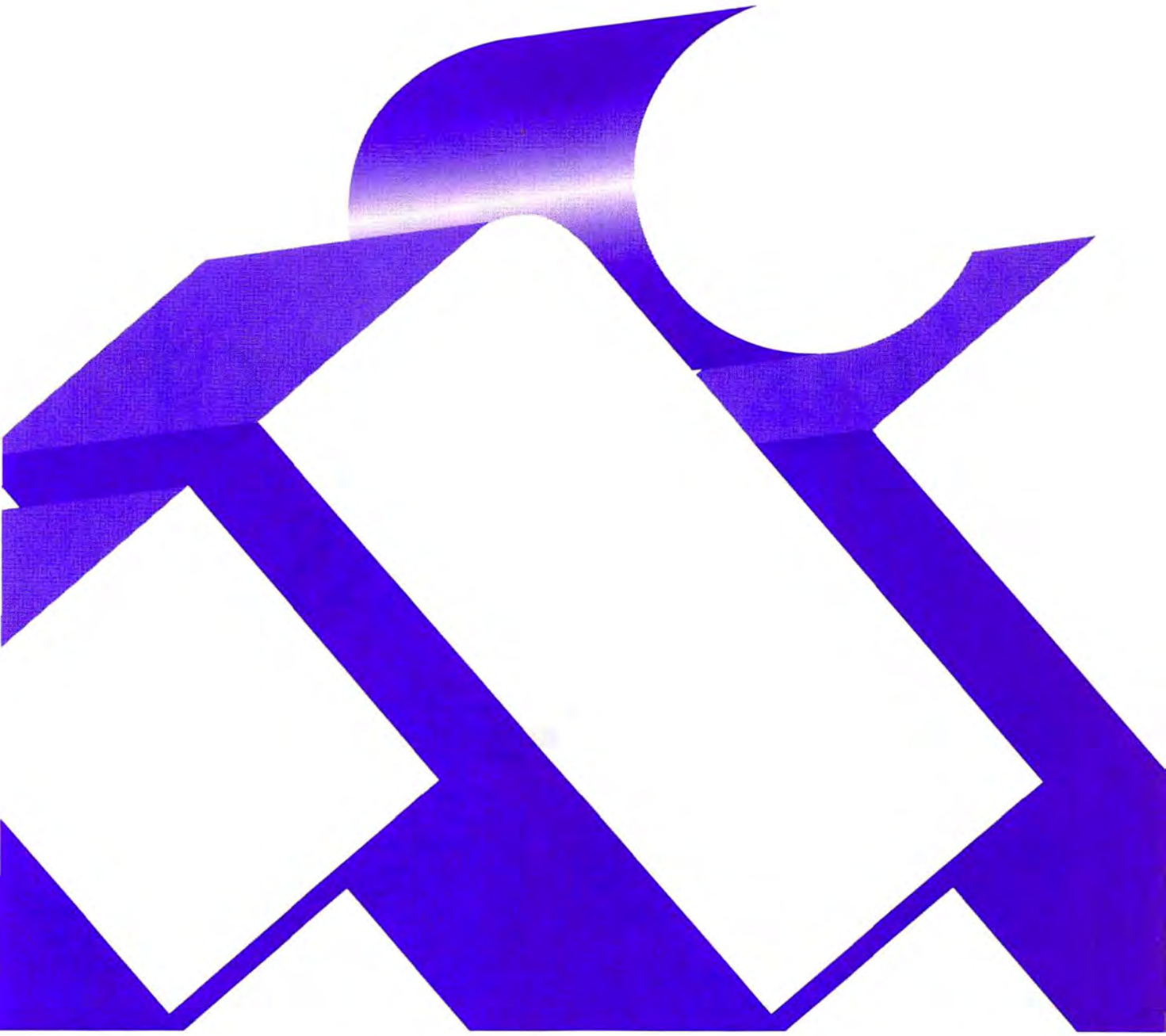


You can apply free rotation only to some FreshPaint objects. You can rotate existing portions of your painting only in 90-degree increments — a sorry limitation unique among these five programs.

Cricket's brush can smooth, smear, and slide painted areas, but there are no transparent-paint options. Its smoothing talents, however, rank highly, even though smoothing isn't permitted on lassoed selections but only within a rectangular selection. The brush tool can also be used to smooth.

Cricket Color Paint's Bezier tool is well implemented, comfortable to use, and predictable. As you move the cursor from point to point, the curve follows it so you can preview the curve's path before clicking. Opposing control points of a curve can be individually tweaked so that each segment of the curve has its own curvature.

Color Paint's double-nozzle Texture tool opens up a wonderland of spray-paint effects. You can customize each nozzle to spray a variety of patterns at selectable flow rates and shapes—one nozzle sprays the foreground color, and the other the background color. It's more than an airbrush, because with minimal effort, you can set it to make fractal lines or random textures. But Cricket Color Paint's version of



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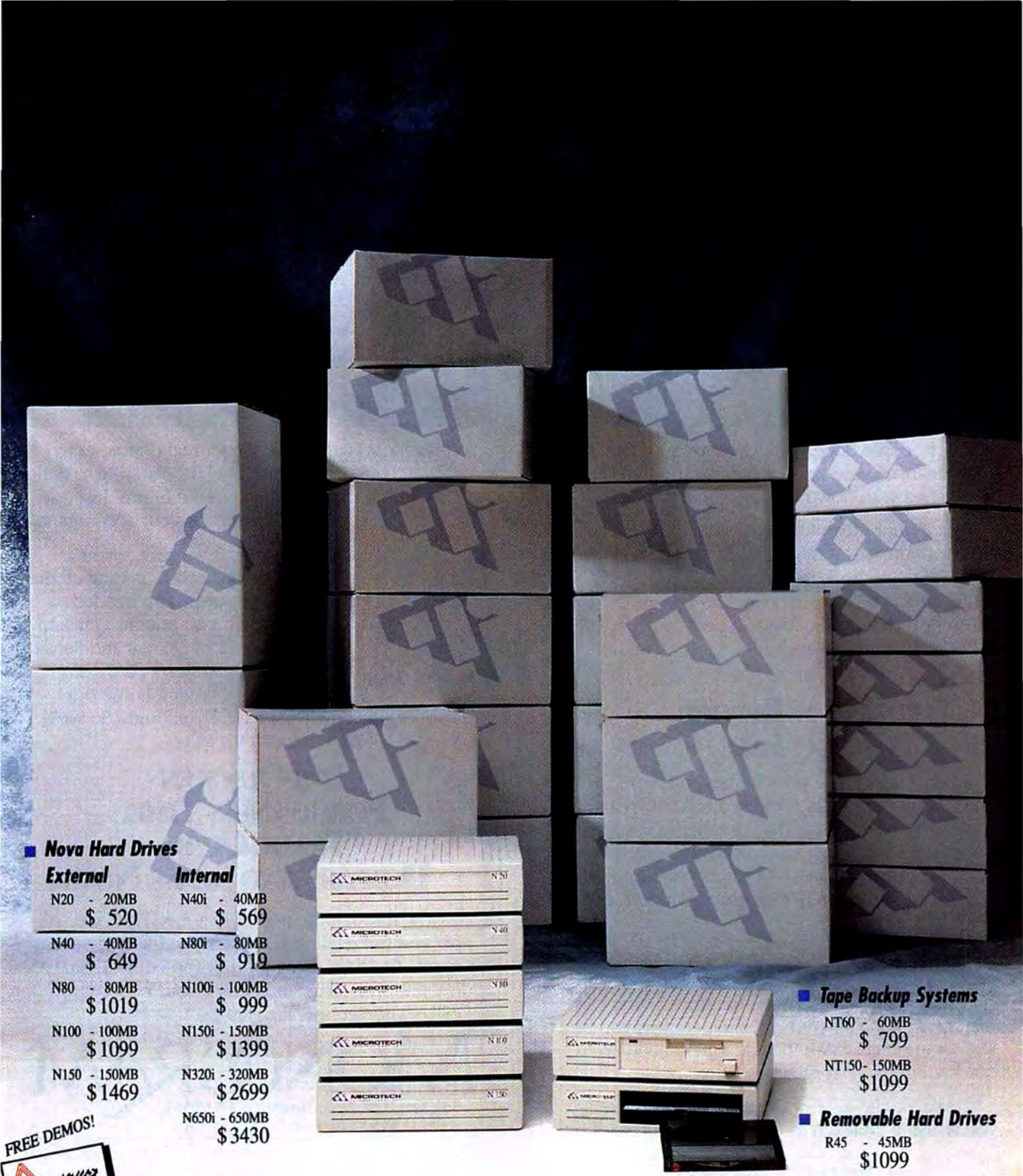
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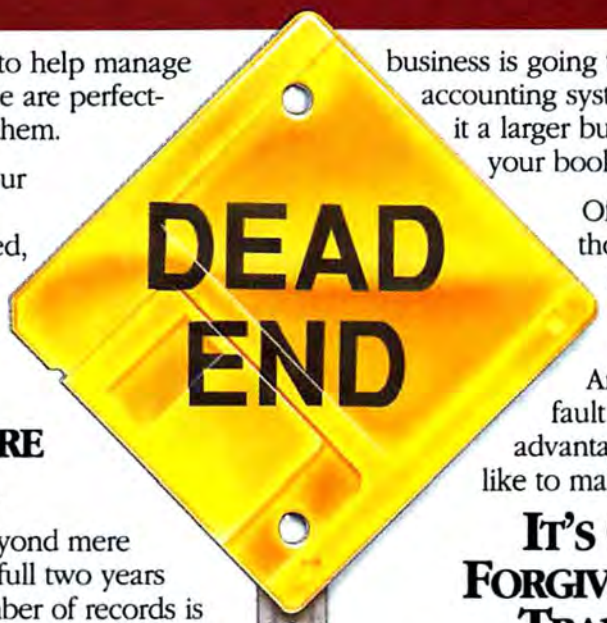
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lightening or darkening a selection is to randomly add foreground or background pixels. It doesn't try to substitute or dither darker or lighter colors. In other words, this feature is essentially useless.

The spyro-polygon and rotated-polygon tools produce spectacular reshapable FreshPaint objects that are radially symmetrical. If you want stars, gears, sparkles, icicles, mandalas, or even something that looks as if you'd spent three weeks drawing it, these are slick tools. But, generally, they have only limited utility.

Cricket Color Paint can open multiple files simultaneously; import graphics in MacPaint, Cricket Paint, PICT, and PICT2 formats; and save files in its own format or PICT2.

Modern Artist 2.0

Modern Artist's interface reflects a nonstandard philosophy. To its credit, it does some neat stuff very well. It paints in two modes — Standard mode creates files that employ the 256-color palette that the System uses. Unfortunately, you can access only 92 of those colors at any one time. Colors required by gradient fills and shading are simulated by dithering.

The program's Expert mode uses a modified palette that dedicates 128 colors for producing smooth color gradients. You can determine the start and end colors for four 32-step gradients. These gradients are tricky to

What Is a Paint Program?

Paint programs provide electronic counterparts to conventional painting implements — pens, brushes, and paint. They offer ease of editing, sophisticated color manipulation, and special effects that can't be attained with physical media.

When painting with a paint program, you deposit electronic dots on an electronic canvas. The program remembers the art not as a shape but as a mosaic of colored pixels, or a *bit map*. Paint programs are not *object-oriented*, or draw, programs, as Canvas, MacDraw, and SuperPaint are. Draw programs keep a database of the mathematical descriptions of drawn objects. Object-oriented art has advantages over bit-mapped art because its elements are easier to reposition, restack, scale, group, and ungroup. Objects print smoothly at the printer's best resolution. Bit-mapped art, on the other hand, always looks, handles, and prints like a mosaic, pixel by pixel, regardless of your printer's resolution. All the paint applications reviewed here paint in up to 256 colors and print at 72 dpi. Some come with a software utility for creating color separations, scanning art, or viewing images sequentially.

There are other applications that offer a painting environment as part of a far larger set of other capabilities.

Canvas 2.0, for instance, is a full 24-bit–color program that doesn't work the same way the 8-bit–color paint programs do. It features unlimited layers and can work with objects as well as bit maps. Its paint attributes can produce free-floating bit-mapped objects, but each bit map can have only two colors — one for the painted pixels, the other for the unpainted ones. Bit maps can be stacked to form complex color art, but images that can be created with the lowest-end 8-bit–color paint program are difficult to produce with Canvas. Deneba Software is wholeheartedly not positioning Canvas 2.0 against 8-bit paint programs.

LaserPaint Color II from LaserWare has a painting mode as well as the following PostScript capabilities: drawing, page layout, 24-bit–color handling, and excellent color separation. LaserPaint's painting capabilities don't fare well when compared with those offered by dedicated paint programs. On the other hand, its combined capabilities (disregarding its problematic interface) are impressive and put it in a different class from other paint packages.

Other notable programs with color painting features — and an array of other powers — include **MacroMind Director,** an animation package that has palettes and menus packed with sophisticated painting tools integrated with its animation interface. Also, **SuperCard,** from Silicon Beach Software, has sufficient 8-bit–color painting power to serve most basic needs, as well as having a complete object-oriented drawing mode and an application-creation engine. Finally, **Graphist Color Paint,** a French product, is a sophisticated paint program, but its status in the United States is uncertain because its U.S. publisher, Aba Software, has closed its doors.

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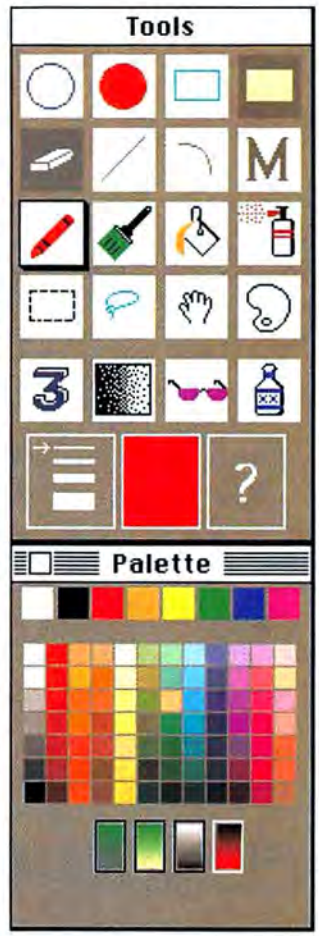
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manage and easy to change accidentally, which also changes the areas in your painting in which they have been used. Fortunately, such accidents are undoable.

Paintings produced either in the Normal mode or in the Expert mode and saved as PICT2 files retain their original appearance when exported to other applications. Expert-mode paintings can be opened only by Modern Artist. Each tool and mode remembers its most recently used color, which is more a bother than an asset. You usually want to apply the same color with any tool.

In the Wet Canvas mode, the brush runs out of paint as the stroke proceeds, and its starting color blends with overlaid colors, producing a realistic wet-paint effect.

The Stain tool can recolor pixels of a specific color while leaving others unaffected, even if they're intermixed. You select an area containing the color you want to change, pick the specific color from within that area, and watch the recoloring. You can take the same step with the brush tool. You can optionally reverse the selection and stain all the colors except the selected one.

You can apply an additive color tint to an area that is specified by the marquee, lasso, or oval tool. The lasso tool has special options that let you zero in on the color you want to change or exclude, even if they happen to be highly intermixed.

Second only to Studio/8, Modern Artist has the most-surgical lasso tool of the bunch. It can be configured in several ways. It can select whatever area is enclosed or be assigned a color from the palette or from the click point and then either include or exclude that color from the selection. The lasso tool can even penetrate a color region to seek out all areas of a specified color, which enables you to grab a cloud of one color from the midst of clouds of another color. It's too bad that lassoed selections are second-rate citizens. You can move them, smooth them, and cut and copy them, but other special effects — such as flips, rotations, and distortions — work only with selections made with the marquee tool.

With the shading tool, you can apply fully directional gradients that progress through the palette steps between two end colors or go directly from one color to the other, passing through gray. Effects are limited to fully directional and centered sunburst, and you can't pick the exact center of emanation. Modern Artist excels at automatically creating 3-D shaded spheres illuminated by an imaginary movable light source. It also makes transparent spheres that appear to refract what's behind them. They're nice effects, but you can use them only so often.

You can make smooth curves by dragging or by clicking with the crayon or brush tools on pass-through points.

Modern Artist 2.0 opens one file at

Modern Artist



Marcie used the Expert mode to achieve smooth gradients on the floor and ceiling in the painting. She made the glass transparent manually with the tinting tool.



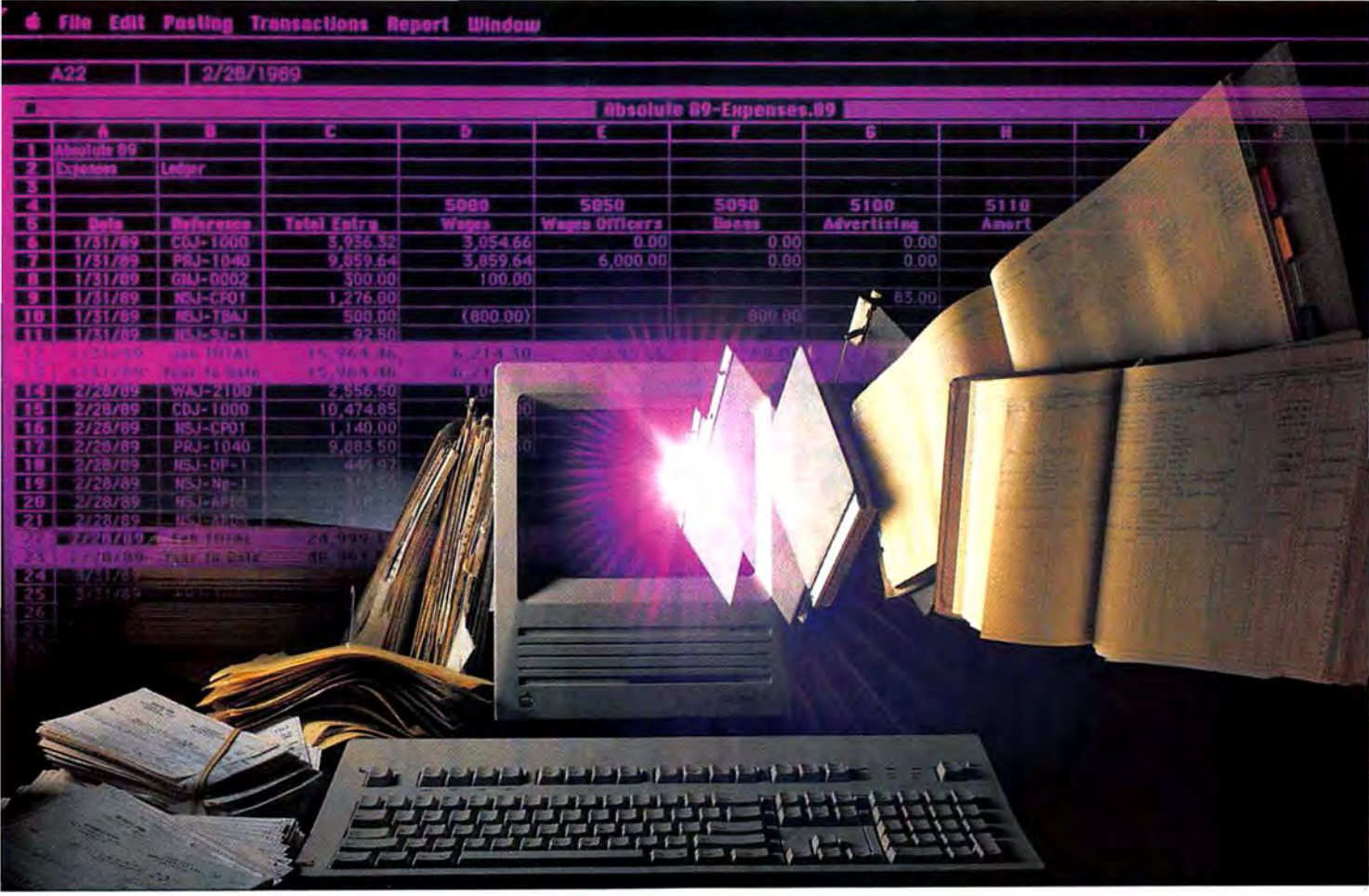
Rom used the Expert mode for the ceiling, wall, and mirror gradients. He tinted the glass and used the Wet Canvas mode to shade the clouds and the soap bar.



Teddy went to town with Modern Artist's Wet Canvas effect. At first, or even second, glance, you wouldn't identify this work as having been produced electronically.



Thomas used the Expert mode to make the ceiling and wall gradients. He tinted-in the mirror bevels and the corner line. The wardrobe's wood texture looks exceptionally natural.



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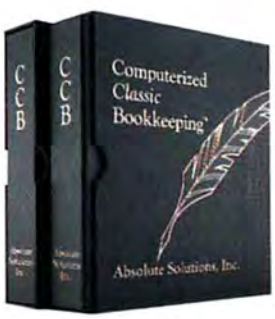
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a time. It can read PICT2, MacPaint, and its own rPICT (Expert) format, as well as low-resolution preview images of EPSF files. It saves files in PICT2, rPICT, and MacPaint formats. Modern Artist comes with ColorSep, a color-separation utility that can handle its special rPICT- and PICT-format files.

Photon Paint 1.1

Photon Paint has an unusual interface, but buried beneath several hard-to-peel layers is some pretty good

The Testers and Their Choices

Marcie Dale Begleiter is in her fourth term of studying for a master's degree in fine arts. Marcie used the programs in this order: Cricket Color Paint, Modern Artist, Photon Paint, PixelPaint, Studio/8. **Would Buy: PixelPaint.** →





← **Rom Impas** is an industrial-design major in his third term. He used the programs in this order: Photon Paint, PixelPaint, Studio/8, Cricket Color Paint, Modern Artist. **Would Buy: Studio/8.**

Teddy Yang is an illustration major in his seventh term. He used the programs in this order: Modern Artist, Photon Paint, PixelPaint, Studio/8, Cricket Color Paint. **Would Buy: Studio/8.** →





← **Thomas Gerlach** is eight terms into a master's degree in graphics and packaging design. He used the programs in this order: Studio/8, Cricket Color Paint, Modern Artist, Photon Paint, PixelPaint. **Would Buy: Studio/8.**

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Marcie missed easy-to-use gradients and chose patterns and hand-shading. She used the variable Blend option to make the glass transparent.



Teddy made good use of Photon Paint's excellent blended inks for the glass and chose the airbrush tool for shading.



Thomas used a neat trick here. He painted the glass offstage with normal inks. He then selected it and pasted it into the room in the Blend mode.

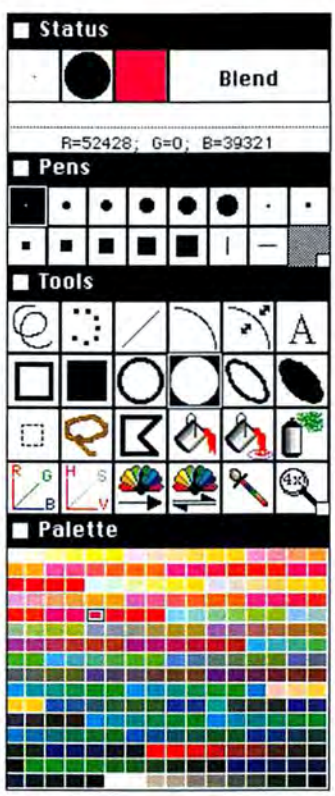
stuff. Unfortunately, the program's incredibly poor documentation makes for an unsavory learning experience. The manual has *only* text — not one graphic, symbol, or screen shot.

Photon Paint's working palettes are large and eat screen space unless you hide them or send some behind the document window. The pen and main tool palettes can be resized. Only 14 pen shapes and sizes are available, and changes affect the width of every tool, including the airbrush. There's a polygon tool, but it isn't fillable.

Color palettes are loaded with each document, but the last palette loaded is always active. Bringing an image to the front shifts its colors to those of the currently active palette. You can't undo this effect, but you can revert to the last-saved version.

Several color-management tools let you make sweeping changes to the color palette to create a transition by hue, saturation and luminance or by RGB values. You can edit any palette color individually with the standard color wheel.

The color-grabbing eyedropper tool lets you select a color from your painting, and then it reactivates your last-used tool so you can work with the grabbed color. Photon is on a par with Studio/8 in its ability to protect painted areas by color. That ability should be a requirement for any full-featured paint program.



Photon Paint's transparent paint effects are excellent — probably the best you'll find among these programs. You can set the precise percentage of new-to-old paint mixing, but when you first stroke, the paint looks opaque until you release the mouse button. The brush in the transparent mode must be used very slowly, or it will leave spots along the length of the stroke.

To get a gradient fill, you can either struggle with the lighting and wrap functions — and hope for the best — or use the Wash mode, which gives fine control over the entire shading range but can't be controlled directionally. Photon Paint doesn't dither well, so gradients look banded unless you set aside a good range of palette colors for the job.

Both the lasso and marquee tools can select areas that are of a specific color not of the background — even individual pixels. You can make multiple discontiguous selections by Command-selecting additional areas, even combining the marquee and lasso tools to do so. Selections can be flipped, resized, twisted, free- or step-rotated, or wrapped, but these processes are slow.

Photon's single-curve tool should be offered by every paint program. Drag it between two points and then pull the resulting line into a bulge that responds smoothly to the pull.

Powerful effects such as wrapping a selected area onto a cube, sphere, cone, cylinder, or irregular solid are available. These can be agonizingly slow for areas larger than about one square inch. They work with colored-lighting options to give you nice visual treats — but you'd better want them badly enough to put up with lots of dialog boxes, experimentation, and waiting.

If you click on an area with the magnifying-glass tool, a new window, zoomed to four times the magnification of the area in which you clicked, will appear. Now click in either window, and another 4x zoomed view will pop up. You can work with the entire image in any of the windows and adjust the magnification with plus (+) and minus (–) buttons.

If you paste and then shift a selection while the image is still shimmering, the selection will cut a hole into your painting. Before pasting the selection, you can click where you want the upper left corner of the selection to appear, but you should leave expendable space for the entire item. Even after pasting, when you distort a displaced selection, whatever's beneath it is ripped off the canvas.

Photon Paint reads and writes only PICT2-format files and can open as many documents as RAM permits.

PixelPaint 2.0

PixelPaint's latest release, 2.0, retains a deceptively simple interface, but more than ever, once you get into the Special Effects mode, the tools put on their best show, menus bulge with possibilities, and anything goes. The manual is as good as they get and guides you expertly.

PixelPaint is exceptionally strong in color-palette management. A variety of palettes are instantly available as starters; they include Rainbow, Fleshtones, Grayscale, HP PaintJet, System, and more. You can access other palettes as you would files, customize them, and save them for use in other documents. Palette colors can be copied and pasted like spreadsheet cells. Buttons let you modify selected colors or ranges of color in ways such as darkening, lightening, warming, cooling, sorting, and contrasting. You can use the System color wheel to change any selected color or choose from the full range of Pantone colors.

If you plan to alter the palette significantly, you can opt to have PixelPaint review each image pixel to find the closest new-palette color that matches the pixel's previous color. With this option off, your palette changes will show up exactly in the existing image pixels controlled by the colors you've edited.

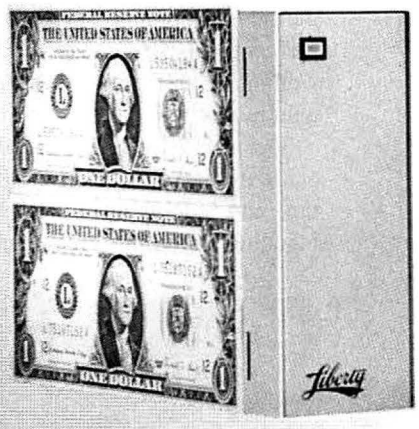
Gradient fills are easy to specify. You select the foreground color and a blend color from the palette or the image, and PixelPaint forms a color transition by dithering the two or by stepping through the intervening colors in the palette. There's a wide range of fill effects, including fully directional gradient fill, but you can set only the basic direction of the fill — not its center of emanation.

PixelPaint offers only the marquee and the lasso tools for selecting items. The lasso tool can be modified to select a contiguous area of color by

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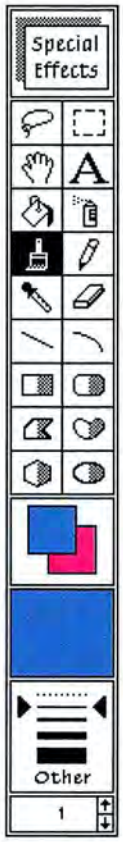
starting from inside the color and moving to its borders. You can select multiple discontiguous areas simultaneously. You can also select and manipulate the last-painted item. Still, several of the test painters wanted better selection tools.

Masking areas is like using a frisket, protecting the area from applied paint. Multiple areas can be masked, and masked areas can be removed from an existing mask. Reversing the mask effect causes editing effects to work only on areas that have been masked. PixelPaint's masking, however, is limited to hand-selected areas only. There's only minimal help in selecting and masking based on multiple intermixed colors.

Two curve tools — Bezier and spline — are at your disposal, and each handles curves differently. Unfortunately, you can't see actual curves until you've laid down all their control points. These poor implementations of curve tools don't fit well into PixelPaint's otherwise elegant tool set.

Special brush effects include lightening and darkening. Pushing, smearing, and smoothing are useful for blending adjoining colors and for pushing a small amount of one color into another. The size and flow of the patterns sprayed by the airbrush tool can be numerically specified.

Dynamic effects that act on a selected area include crop, distort, free-rotate, perspective, slant, arch, double arch, and balloon. They're exceptionally quick. Visual effects, a superset of the brush effects, act only on a selected area. They include esoterica such as mosaic, relief, etch, thin, and warp. Shadow effects include automatic drop shadows with color and other variations, as well as multiple shadows of gradually changing color. The shadow interface is well designed for previewing combinations of effects.



PixelPaint 2.0 imports MacPaint, PICT, PICT2, TIFF, and EPSF files and Startup Screens. It opens only one document at a time, regardless of the amount of RAM. It exports MacPaint, PICT, PICT2, Startup Screen, PixelPaint Stationery, gray-scale and color EPSF, and TIFF files saved only as gray-scale images. The program has a built-in color-separation utility and comes with PixelScan, a driver for the Sharp and Howtek 24-bit color scanners. PixelScan is capable of reducing a 24-bit image to 8 bits for importing, editing, and separating in PixelPaint.

Studio/8

Studio/8 is a complete package that provides a well-integrated set of power features that simplify, rather than complicate, tasks. One of its special strengths is its ability to select *colors* and *areas* for inclusion or exclusion in editing events. It boasts freehand, rectangle, and polygon selection tools, the different shapes of which make it easy to grab a region.

With these tools, you can capture exactly the shape you've traced, exclude the background color from the selection, or exclude *any number* of specified colors from the selection. The tools can contract or expand to reach the edges of a color region. You include or exclude colors by dragging the tool across the document or selecting them from the palette. These

PixelPaint



Marcie used a customized palette and the gradient feature for shading the ceiling, walls, and floor. The brush tool in the Slide, Smear, and Smooth modes created nicely blended clouds.



Rom customized his palette and used several gradient and fill modes to do the ceiling, walls, floor, and glass. The edges of the clouds are good examples of PixelPaint's smoothing talents.



Teddy used a modified rainbow palette and several blends for the ceiling and soap. He was able to synthesize the transparency of the glass by using some carefully chosen colors.



Thomas made a subdued custom palette and used several well-chosen gradients for most elements. He lightened the mirror borders and wall joint with PixelPaint's lightening capability.

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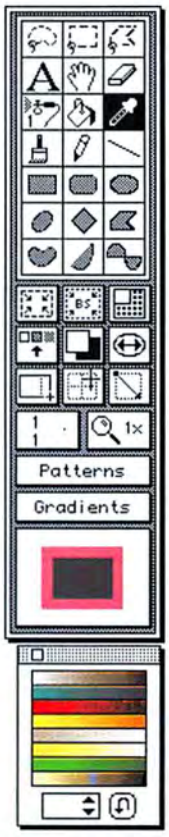
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methods simplify selecting a multicolored item from a multicolored background.

You can select multiple discontiguous areas simultaneously and treat them as one selection. You can even activate the last-drawn primitive as a selection and move or alter it while leaving the original background intact. Selected areas can be refilled, inverted, smoothed, lightened, darkened, tinted, blended, flipped, rotated, distorted, sheared, resized, or bent.

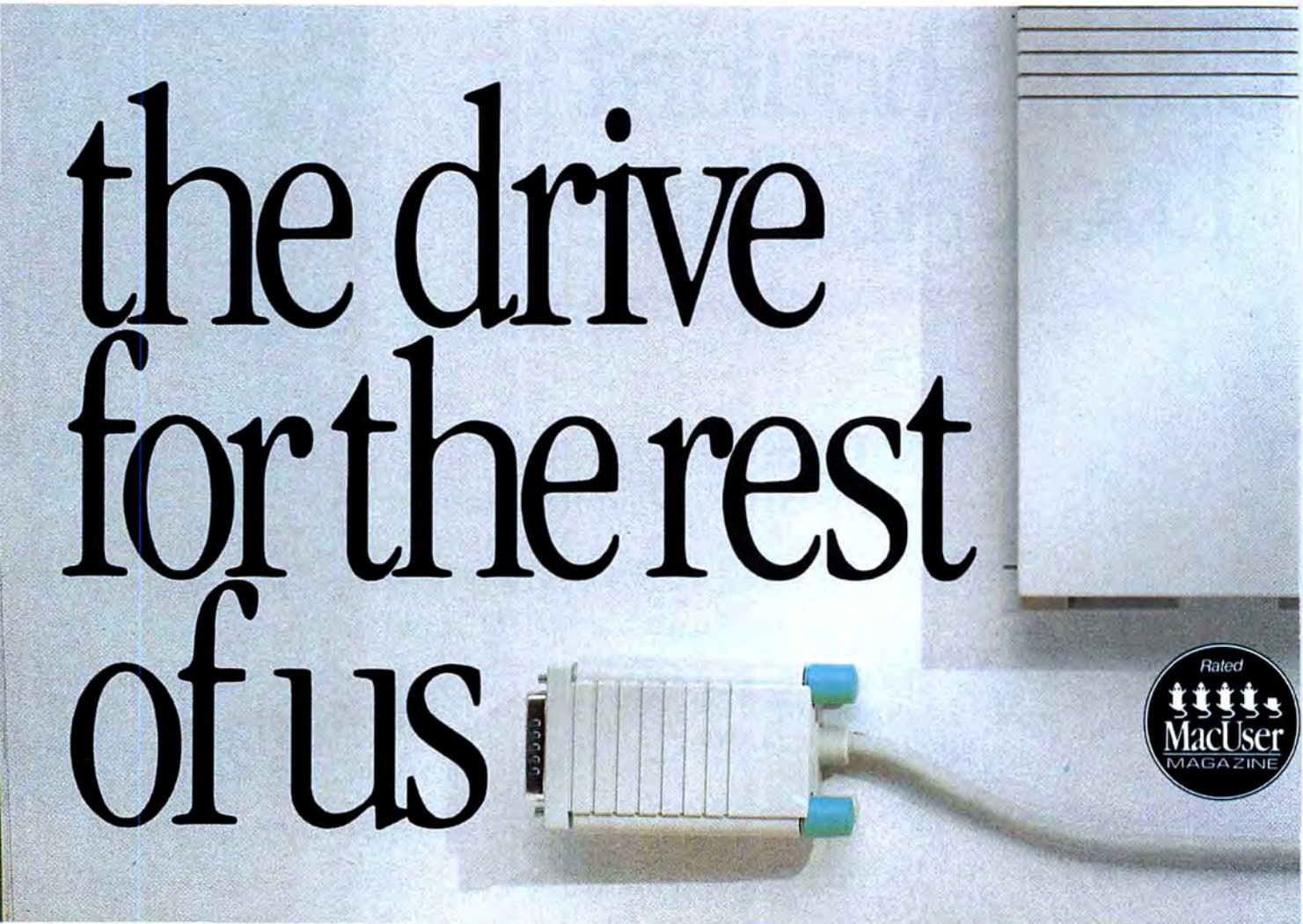
Up to eight 32-step gradients can be defined at any one time and added to a special palette. To make a gradient, you select its first and last colors from the painting itself or the main palette, and Studio/8 fills in the intermediate hues. Changing or deleting a gradient has no effect on areas in which you've previously used it. When filling a shape with a gradient, you set the direction and the precise starting point of the first color — anywhere inside or outside the shape. Studio/8 has two fill modes, and one of them is shape-sensitive: It adjusts the fill to the shape of the area, so that a circle, for example, can look like an illuminated sphere with a bright spot inside it.



The program's brushes work as expected, but they can also be used for tinting, smearing, lightening, darkening, and blending. You can automatically trace the edges of a complex selection with a brush. You can also configure eight airbrushes per document, each with its own pattern size and flow. Custom brushes can be saved separately for use in any document.

Studio/8's weakness is in its special-effects brush modes. The Smear and Slide modes produce results that are too rough compared with what PixelPaint or Cricket Paint can do. Moreover, the special-effects brush lags severely behind your natural stroke. The Smooth mode is the worst, often bringing up the watch cursor if you break your crawling mouse stroke.

Studio/8's Bezier tool is able to draw smooth curves similar to the ones produced by Adobe Illustrator's and Aldus FreeHand's Bezier tools.



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The **MacIntizer** compares favorably with other tablets in terms of mouse emulation and drawing, but it lacks some of their software features. There's no built-in capability for using or creating overlay templates, although developer stacks are provided for HyperTalk and Pascal. The active area can easily be resized through the Control Panel. The documentation is provided as a HyperCard stack, an annoyance to those who want to read from a paper manual. The documentation is clear and friendly, but it shows that the product is unfinished and promises new features in the future. $495 (12 x 12 inches). GTCO Corp., 7125 Riverwood Drive, Columbia, MD 21046; (301) 381-6688.

Mice in Space

A conventional puck or stylus never leaves its pad, but the stylus of Mira's HyperSpace modeling system is at home in the third dimension. Move it through space as if you're waving a sparkler and watch the spiraling path trace on-screen. Then hold down the Look At key while circling the same airspace; the screen views your spiraling path from all sides.



HyperSpace's 6-D mouse lets you digitize real-world objects and model the resulting 3-D database.

Now place a nonmetallic 3-D object on the special pedestal and carefully trace polygons along its surface. You can shade, smooth, or view the object on-screen from any direction. While pressing the Light Source key, orbit the object with your stylus as if you held the moon. In real time, the on-screen model adjusts its shading accordingly.

That's what a 3-D mouse can do — define positions in space. But because it comes with a 6-D mouse, the HyperSpace modeling system does more. In addition to x,y,z positioning, it inputs orientation (yaw, pitch, and roll), which makes real-time biomechanical studies and elegant 3-D animation effects possible. Three orthogonally oriented magnetic-sensor coils in the stylus make those extra dimensions possible. They know just how far away they're floating from their three counterparts in the pedestal.

How can this extraordinary technology be used? A museum can digitize its sculpture collection in 3-D to create on-screen catalogs. Even better, restorers can use it for repairing damaged artwork, and forensic scientists can digitize a skull that needs identifying and then use specialized software to overlay the model with muscle and skin to re-create features to help establish an identity.

Until the price of 3-D digitizers decreases (HyperSpace retails for $5,300 to $7,000), you may want to look for libraries of 3-D images created with this technology. Contact Mira Imaging, Inc., at 793 Pharmacy Ave., Scarborough, Ontario M1L 3K2, Canada; (800) 263-9599 or (416) 285-9766. — Kevin Countryman

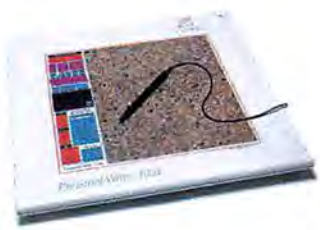


The **CalComp 2300A** also comes in three sizes: 12 x 12, 12 x 18, and 18 x 24 inches. It's about as full-featured as a Mac tablet gets. It allows resizing and repositioning of the drawing area. Six input devices (pens and pucks), as well as a number of software templates, are available. The tablet comes with an AE Template Manager, which lets you perform all the System and HyperCard menu functions directly on the tablet. Other available templates include VersaCAD, PageMaker, and WordPerfect. The PageMaker template for the CalComp 2300A is moderately useful. Some formatting functions are easier to execute from the tablet, but the time saved by not having to pull down menus is lost as you look between the tablet and the screen. The preprinted templates are well designed, and the software works in PageMaker without a hitch. CalComp 2300A Series: $595 (12 x 12 inches), $1,095 (12 x 18 inches), $2,495 (18 x 24 inches). CalComp, Inc., 14555 N. 82nd St., Scottsdale, AZ 85260; (800) 225-2667.



The **BitPad Plus** offers the same basic drawing capabilities as do other pads. The software has no macro-making capability, however, so plan on using the keyboard frequently to operate your application. Pens and pucks are available as input devices. The button tip on the pen clicks too easily, and since there's no tactile or audible feedback, it causes misclicks. Scaling the screen-to-pad ratio is possible, but the ratio must be entered numerically (pixels to inches), so get out your calculator. Because the control software, unlike other pad software, is not available through the Control Panel or a DA, plan on using MultiFinder if you want to change the BitPad's settings while running another application. $495. SummaGraphics, Inc., 60 Silvermine Road, Seymour, CT 06483; (203) 881-5400.

The **PW10SL** from Personal Writer offers a very friendly software setup for beginning users. A preprinted overlay on one side of the tablet contains the basic system-menu commands (File, Edit, and the like), a small mousing area, control of the PW10SL software, and a small keyboard. The overlay also contains a macro pad for storage of up to 400 user-defined macros. Macro programming is easy to do by recording, but drawing movements can't be included. Scaling and moving the drawing area involve simply clicking and dragging. Unique to Personal Writer is the handwriting-recognition capability of the **PW15SL** model tablet. (See "See Mac Read," March '88). You have to spend several hours entering writing samples so that Personal Writer can recognize your characters. Personal Writer claims a 98-percent character-recognition success rate with consistent writing. This feature is for those who can't or refuse to type and as a convenience for graphics input. PW10SL, $799; PW15SL, $1,299. Personal Writer, Inc., 1900 Avenue of the Stars, Suite 2817, Los Angeles, CA 90067; (213) 556-1001.

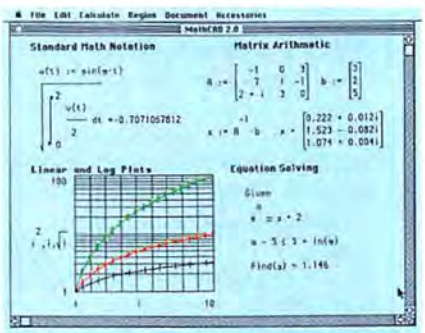


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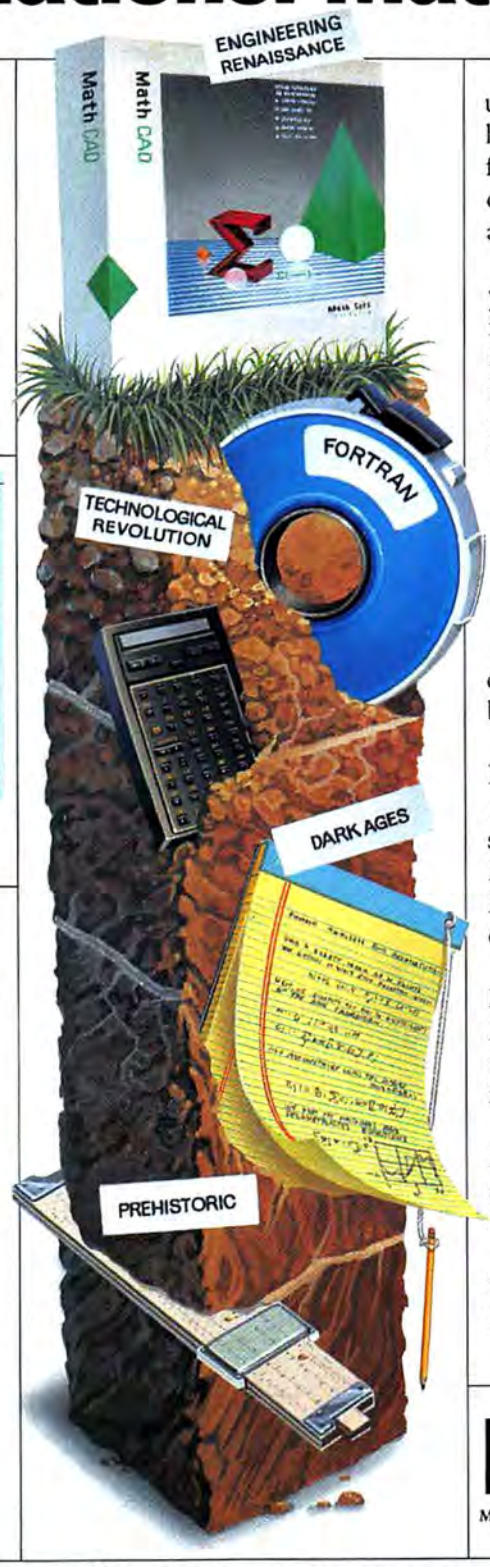


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screen keypad. The Mouse Touch must be installed by ISI. Software that will allow a less-complicated controller to be used with the Mouse Touch is being developed by ISI and Elographics. It should reduce the price of the Mouse Touch package by $400. $1,000 plus $150 shipping if you have a monitor; contact ISI for quotes on purchasing a monitor with Mouse Touch. Information Strategies, Inc., 888 S. Greenville Ave., Suite 121, Richardson, TX 75081.



The **Mac 'N Touch** screen by MicroTouch Systems is best for applications that require a lot of pointing and clicking, such as HyperCard and the Finder. It works less well with programs that require fine control of screen objects, such as graphics packages. The screen is available in two forms: an add-in screen for Mac II or SE models that, according to MicroTouch, requires about 30 minutes to install; and a snap-on screen for the SE only. Mac 'N Touch Add-In, $745 (SE), $895 (Mac II); Mac 'N Touch Snap-On, $595 (SE only). MicroTouch Systems, Inc., 10 State St., Woburn, MA 01801; (617) 935-0080.

Just Say the Word

Keyboards, trackballs, no-hands mice, and touch screens — there are numerous ways to interact with your computer. But what about the most natural way of communicating? Voice-input technology is in its infancy, and the dream of conversing with your computer as you would another person is far from becoming reality. But voice input can be used to issue common commands to a computer.

Most voice-input systems work by matching a spoken word to a template for the same word that the user input during a computer "training" session. If a template can be matched with an acceptable degree of accuracy, the command is carried out or the word is entered just as if it had been typed on the keyboard. This training must be done by all system users so that their specific vocal patterns are recorded.

There are problems with the current level of this technology. Each word must be programmed in by a specific user. Ideally, the computer would be programmed to recognize anyone's voice. Words that are similar or identical in sound, such as *two* and *to* or *quit* and *quiet*, may be misinterpreted, and normal changes in a person's voice may cause recognition problems.

Voice recognition on the Macintosh is synonymous with Articulate System's Voice Navigator (see "MultiMedia Today," March '89), the only commercial system available for the Mac. Voice Navigator uses spoken commands to select menus and tools, open and close applications, and move the cursor. Input is accomplished with a microphone and a process called generalization — a word is repeated several times, and the variations increase the recognition rate. The user can specify a minimum confidence level.

Voice Navigator's commands are structured in levels — one for menus and another for dialog boxes, for example. Depending on the model, each level can have 200 to 1,000 commands. This hierarchical structure allows for a virtually unlimited number of commands. Commands are saved in sets that can be used for different applications that have similar commands.

Voice Navigator comes in two models, the 200 at $1,295 and the 1000 at $1,795. The Developer's Toolkit costs $500. Contact Articulate Systems at 2380 Ellsworth St., Berkeley, CA 94704; (415) 549-1013.

Graphics Tablets

Although the Mac has always been a "graphics" machine, the mouse is really a pointing, not a drawing, tool. Its shape and the position in which it must be held simply don't mimic the way we're accustomed to holding a pen or pencil. It's like drawing on a blackboard with an eraser instead of chalk.

Another problem is the mouse's movement pattern. Moving the mouse quickly over the same distance moves the cursor farther on-screen than moving it slowly. When you pick up the mouse and set it down in another spot, the cursor doesn't move because the ball hasn't rolled. This relative movement also poses a problem for freehand drawing, in which the distance moved with the drawing tool needs to be equal (or at least proportional) to the length of the drawn line.

Tablets, with their pen-shaped styli, provide the solution for designers or artists who must use the natural penlike movement of the hand as input to a software program. Most tablet systems also allow for use of a pointer — a flat puck that can be moved around the surface and offers cross hairs for precise cursor placement.

All tablets provide a drawing area where each position represents a particular point on the screen. Most tablets also offer a command or macro area where the stylus or puck can perform operations in the system or in particular software. This area can usually be designated in software.

Preprinted templates are available for some software packages. They sound attractive, but their value depends on the amount of intensive drawing you need to do while accessing system and application functions at the same time. It's easy to see why you would want a template for a CAD program, for instance, but less obvious how it would be an advantage for word processing, where most of the work is done with the keyboard.



The **IS/ADB** is available in three sizes: 8.5 x 12, 12 x 12, and 12 x 17 inches. You can choose among seven pointing devices, including multibutton pucks and styli. The tablet can operate in either the Absolute or the Relative mode, and the size of the active area can be adjusted — being made proportional to the screen dimensions, for instance. A menu strip at the top of the tablet lets you perform some functions without accessing the system menus or the keyboard. All active-area resizing can be done from this pad — a handy feature if you're doing intensive drawing. Also, 12 function keys — equivalent to the ones on the Apple Extended Keyboard — are provided. The manual suggests that you use them with MacroMaker to create macros. The number of system or application functions that can be executed from the tablet is small, and the amount of space devoted to them is also minimal. If you value drawing space over sheer macro power, Kurta's IS/ADB may be a sensible choice. The IS/ONE, a Mac Plus version, and AutoPad, an IS/ONE adapted for use with AutoCAD, are available from AVCOM. IS/ADB, $395 (8.5 x 11 inches), $595 (12 x 12 inches), $965 (12 x 17 inches). Kurta Corp., 3007 E. Chambers St., Phoenix, AZ 85040; (800) 445-8782 or (602) 276-5533 (AZ). IS/ONE, $695; AutoPad Digitizer, $695. AVCOM, Inc., 119 University Ave., Palo Alto, CA 94301; (415) 326-8686.



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and weakness of the McIntyre is its extreme sensitivity; the stick, and therefore the cursor, can be moved by the slightest puff of air, such as that coming from the Macintosh's internal fan. $350. McIntyre Computer Systems, 22809 Shagbark, Birmingham, MI 48010; (313) 645-5090.

Trackballs

Take the standard mouse, flip it on its back, divide the button in two and place the halves on either side of the ball, enlarge the entire unit three or four times — and voilà, it's a trackball. One button is used like the button on the standard mouse; the other works as a lock feature, allowing users to leave a menu pulled down, for example.

The trackball may be the most ergonomic mouse alternative. It requires no arm movement. And unlike the mouse, which has to be picked up and moved around, trackballs require no more space than is used by the unit's casing. It is ideal for mounting on wheelchairs.

Longtime mouse users may have trouble differentiating between the functions of the two buttons. You may click madly away on one button, forgetting that the other has been used to lock an icon, and wonder why there's no response.



Kensington's **Turbo Mouse ADB** lets you leave your hand in one place. When the fingers are on the trackball, the thumb and little finger naturally position themselves over its two buttons. The buttons' mousing and locking functions can be reversed for left-handed people. A "chording" feature, unique to Kensington, provides a user-specified Command-key function that you invoke by pressing the buttons simultaneously. The large ball is not encased in the body of the Turbo Mouse, but it is heavy enough not to be easily knocked out of the device. The Turbo Mouse measures 4.5 x 5.5 inches, making it the most space-efficient trackball reviewed here. $169.95. Kensington Microware, 251 Park Ave. S., New York, NY 10010; (212) 475-5200.

The **quadLYNX** trackball from Asher Engineering has an encased trackball that is smaller than the Turbo Mouse's: Some people may find that its size makes the quadLYNX easier to control than the Turbo Mouse. Its two buttons are located below the ball, so accessing the buttons requires some wrist movement. Although the quadLYNX comes in both ADB and non-ADB versions, the documentation covers installation procedures only for the latter. The ADB cord is too short if you want to connect it to the ADB port on the back of the Mac, but it is long enough if it's connected to the keyboard. $99.95. Asher Engineering Corp., 15115 Ramona Blvd., Baldwin Park, CA 91706; (818) 962-4063.



MicroSpeed's new **MacTRAC** has three buttons located above the trackball: The lock button is sandwiched between two click buttons, allowing equal ease of use by right- and left-handed people. Another welcome feature is a light on the device that signals when the lock button has been pushed. $99. MicroSpeed, Inc., 44000 Old Warm Springs Blvd., Fremont, CA 94538; (415) 490-1403.





Abaton's **ProPoint** has two buttons on the lower left of the casing. Their significantly different size and shape make it easy to remember which button is which. It's fairly easy for right-handed users to comfortably press both the large click button and the small lock button with their thumb; left-handed people may have to take their fingers off the ball to press the buttons with their little finger. The ball is removable, but the unit must be picked up and turned over before the ball can be dislodged. $86. Abaton Technology, 48431 Milmont Drive, Fremont, CA 94538; (415) 683-2226.

Touch Screens

Most Macintosh users input information through a keyboard and mouse-type device and read the result on the computer screen. Touch screens eliminate the middleman, permitting the screen to be used as both an input and an output device, making the computer easily accessible to almost everyone.

Touch screens consist of two primary parts. The screen itself either snaps over the existing screen or is installed between the Mac case and the existing screen. It attaches to a controller, which interprets the touch input. Capacitive touch screens, like the Mac 'N Touch, detect a change in an electric charge caused by the pressure from a user's bare finger or metal stylus. Resistive-membrane screens, such as the Mouse Touch, detect a change in electric flow between layers of Mylar and glass. Resistive-membrane screens can detect pressure from any type of device, such as a mouth-held stick or a gloved finger. In either case, the screen needs to be calibrated through a setup software program to define the relation between the touch screen and the computer screen.

Unfortunately, the standard Macintosh interface with the menu at the top of the screen forces touch-screen users to obscure part of the screen with their hand, and using a touch screen can quickly tire the hand and arm.



The **Mouse Touch** screen from Information Strategies, Inc. (ISI), was selected for use by Unico, an industrial-control manufacturer, because it requires no additional space on a desktop other than that used by the computer. The Mouse Touch is used to select screens, pull down menus, and enter numeric information on an on-

Building a Better Mouse

The first mouse for the first Mac rolled off the assembly line, and computer use was never quite the same again. Two fast operations, point and click, replaced the need to remember commands — the mouse could pull down menus that presented all options.

Mouse use was not always love at first click, though. People didn't object to the functions the mouse could perform but, rather, to its design. It's difficult to control the mouse with enough precision to draw a fine pattern, for example, and using the mouse requires more desk space than may be available. In addition, some people find the mouse tiring because it requires moving the entire arm and hand. People with disabilities such as arthritis, carpal-tunnel syndrome (a disorder of the wrist), or muscular dystrophy may have difficulty using it.

When your mouse just can't handle the job, it's time to look for alternatives.

Six types of alternatives to the Apple mouse — joysticks, trackballs, touch screens, graphics tablets, alternative mice, and hands-free mice — all claim to provide better control than does the original animal. Many incorporate additional features or are more ergonomically designed. Some are only for ADB connection (Apple Desktop Bus, a standard method for connecting multiple input devices) to the SE and Mac II; some are non-ADB for connection to the 128K, 512K, and Plus; and others work with both types of machines.

Still, one person's alternative mouse may be another person's rat trap. Test-drive a few alternative devices before making the investment. And don't give up on the keyboard as an input device. When System 5 was released, it included Easy Access (see "Open Door Policy," February '88), which lets users emulate mouse movement by pressing keys on the standard keypad.

By Jane Berliss and Peter Borden

Joysticks

The joystick is usually associated with applications that involve accumulating points for blasting Gorks, but some manufacturers have looked beyond the game-playing functions to produce sticks that work as mouse emulators. The stick moves the cursor on-screen, and the standard button on top of the stick and the buttons that may be on its base have the potential to perform mouse-button–type functions. Because it requires a lot of movement, the joystick-style mouse emulator is clearly not the ideal equipment for people whose wrists and arms are sensitive to pain or tire easily.



CH Products' **Mach IV Plus** joystick can be used as a mouse emulator. It has buttons on either side of the stick and one on top. Because the documentation covers using the Mach IV Plus on both the Apple IIgs and Mac, it is often confusing. The Mach IV is available in both ADB and non-ADB models. CH Products offers a peripheral called Mirage that adapts earlier non-ADB CH joysticks for ADB use. Mach IV Plus, $89.95; Mirage, $54.95. CH Products, 1225 Stone Drive, San Marcos, CA 92069; (619) 744-8546.



The **MouseStick** by Gravis is like having five thousand joysticks for the price of one. Joystick tension settings and some button definitions are controlled on the joystick hardware. Users can program all other joystick settings and button functions by using the enclosed MouseStick cdev. Each button can be programmed to perform a mouse-type function or execute a keyboard command, with different results, depending on whether it is single-, double-, or triple-clicked. A 16-page tutorial lets users experience both the programming commands and the effects of command execution. $129.95. Advanced Gravis Computer Technology, Inc., 1602 Carolina St., Suite #D-12, Bellingham, WA 98226; (800) 937-0062.

For people who cannot use their hands, McIntyre Computer Systems manufactures the **McIntyre**, a joystick that can be mounted on a gooseneck stand. This joystick is held in the mouth, and clicking requires pressing a button on the top of the stick with the tongue. A program called Screen Typer, which makes an image of the keyboard appear at the bottom of the screen, lets users select letters with the McIntyre and perform most keyboard functions. The strength

PHOTOGRAPHY: PETER ALAN GOULD

define selected areas, colors, or objects as a mask. By masking colors or areas, you can paint over or near them with no fear of ruining prior work. What's more, the mask can be inverted so that it shields the previously unprotected parts of the document and lets you paint what was originally protected.

Studio/8's Draft page is a work space that can also be used as a transparent overlay for documents. With the Draft page transparent, you can paint over the main document without affecting its contents. You can then either merge the Draft page with the main document or use Copy and Paste to transfer elements from the former to the latter.

You can establish vanishing points of a perspective plane by interactively orienting a grid. Once this is done, any selection can be positioned on the perspective plane and distorted according to its position and distance on the plane. This is a powerful tool for creating effects such as tiled areas that vanish toward the horizon.

Studio/8 can directly open PICT, PICT2, MacPaint, and gray-scale and color TIFF documents. The Open dialog box, which can show a thumbnail preview of PICT files, can open as many documents as RAM permits. It can write PICT2 (its default format) and TIFF files in gray-scale and color.

What's the Big Ideal?

What's the ideal paint program? In addition to lightning speed and artificial intelligence, it would include a well-integrated collection of features from the five paint programs we've reviewed here: Studio/8's selection, transformation, and masking talents; PixelPaint's color-palette management, special-mode brushes, dithering skills, and color separation; Modern Artist's expertly shaded opaque and transparent ovoids and its Wet Canvas feature; Photon Paint's texture wrapping, colored light sources, and multiwindow views; and Cricket Color Paint's FreshPaint objects.

Salvatore Parascandolo is *MacUser*'s graphics editor. He has coauthored two books about Macintosh graphics programs. At home he has to stand in line behind three little people to use his own Mac.



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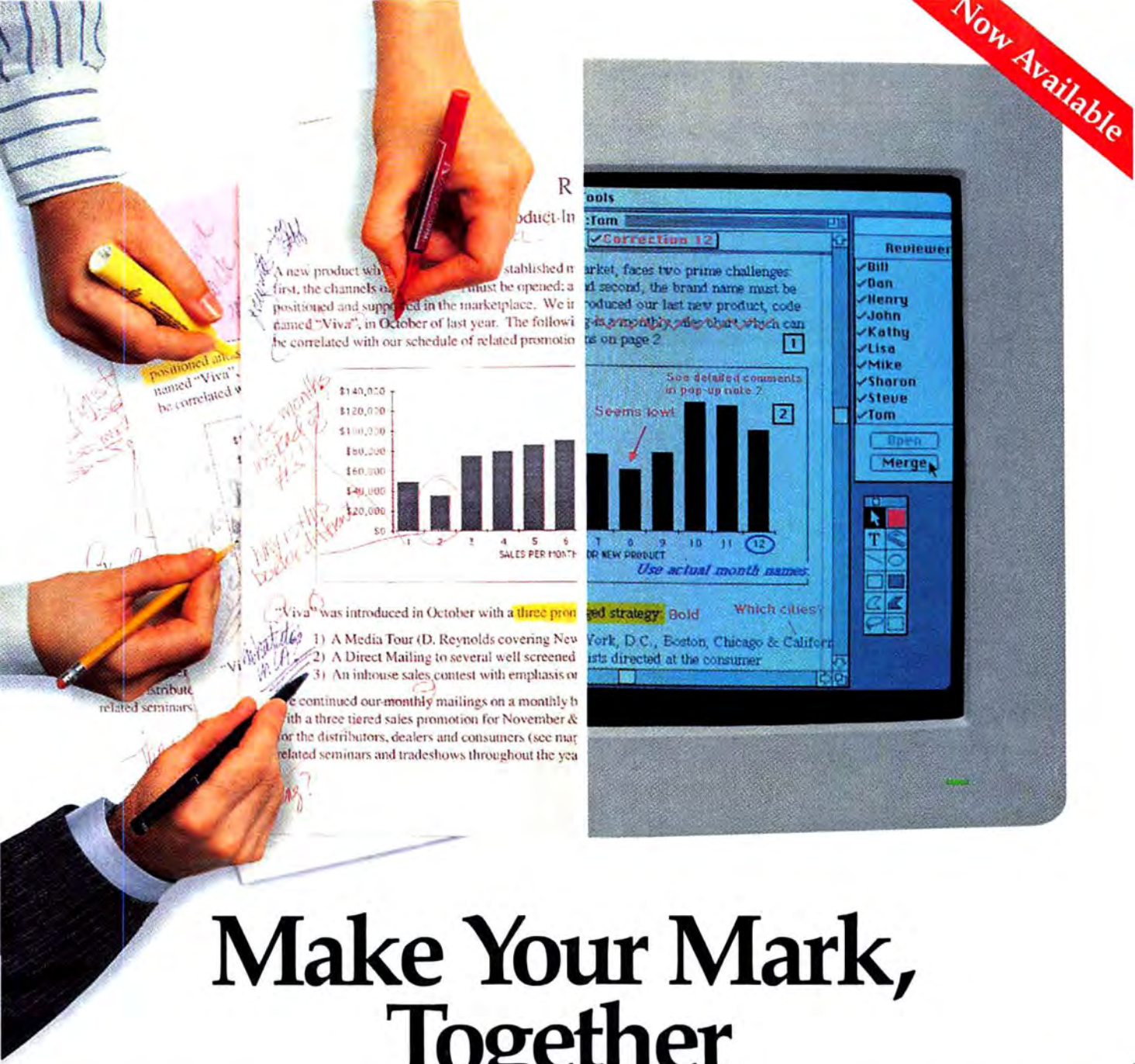
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Report Cards

Cricket Color Paint 1.0 ★★★½
Required Hardware: Mac II with 256-color graphics board, 2 megabytes of RAM, and two 800K drives. Hard-disk drive recommended. A fast, multitooled paint program with a good interface and some unique effects, it needs additional basic painting tools to round it out.
Price: $295

Modern Artist 2.0 ★★½
Required Hardware: Mac II with 256-color graphics board, 2 megabytes of RAM, and two 800K drives. Hard-disk drive recommended. A good collection of color-painting tools, including smart selection implements. Excellent Wet Canvas effect and several other visual treats. Limited number of user-selectable colors. Most colors reserved for special gradients you might not use.
Price: $499

Photon Paint 1.1 ★★★
Required Hardware: Mac II with 256-color graphics board, 2 megabytes of RAM, and two 800K drives. Hard-disk drive recommended. A lean full-color paint program with lots of hidden power. The interface and documentation make learning it a chore. Both need some improvement.
Price: $299

PixelPaint 2.0 ★★★★★
Required Hardware: Mac II with 256-color graphics board, 2 megabytes of RAM, and two 800K drives. Hard-disk drive recommended. A capable color paint program. Its two-mode interface provides both simplicity and power. It offers exceptional control over the color palette, allowing use of the program for gray-scale work. A good choice if you plan to have only one paint program.
Price: $595

Studio/8 1.0 ★★★★★
Required Hardware: Mac II with 256-color graphics board, 2 megabytes of RAM, and two 800K drives. Hard-disk drive required. A powerful painting application with an excellent interface and lots of features. Its selection powers are unequaled, as is its ability to protect selected areas and colors from editing. Unique and powerful gradient-definition method. A good one-stop painting partner.
Price: $495

The Bottom Line

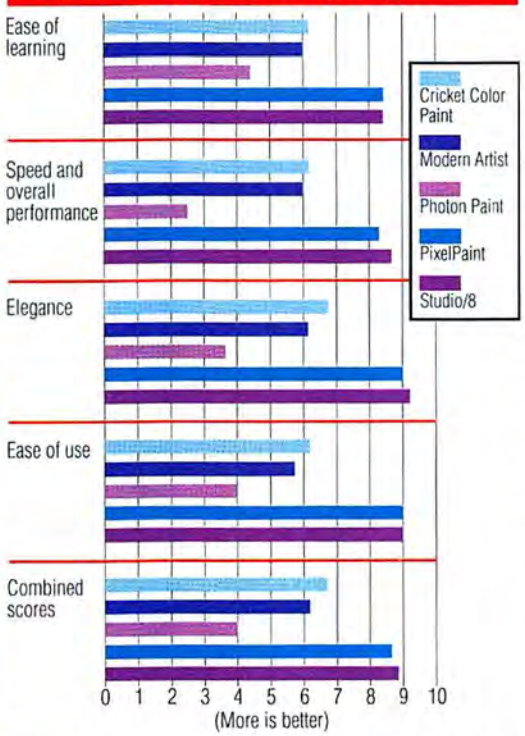
Cricket Color Paint — a tool-rich but paradoxically weak application — was regarded by the students as a good value that they had few gripes about. I suspect that its familiar interface and overall speed helped it make a favorable impression. The students' chief wish regarding this product was for more practical painting tools. If your painting requirements and funds are limited, this package might be for you. It gives you a grab bag of fun tools at a bargain price, but you might come up short on real functionality.

Modern Artist and Photon Paint, both with unique talents, evoked longer wish and gripe lists, with Photon Paint taking the most blows. Looking deeper into the capabilities of these programs, you find that their interfaces are largely at fault. Some of their stronger talents lie undiscovered or abandoned because of weak documentation or implementation. As attractive as their strengths are, neither is a safe lone choice for serious painting. Although Modern Artist comes close, it's still too klunky and color-limited.

Both PixelPaint and Studio/8 are elegant and rich painting applications that are so packed with sensible features that either could easily have monopolized this entire article. They actually share few strengths, but each one's weaknesses can be counterbalanced by a little imagination and mouse-finger grease. Each art student in our panel independently put PixelPaint and Studio/8 on the same pedestal and submitted minuscule wish and gripe lists for each. Three of the students picked Studio/8 as their "would buy" choice.

I have all five programs — and dozens more milliseconds away — but when I paint, I gravitate toward Studio/8. Serious artists who don't want to fiddle with compensatory workarounds should tackle their projects with both PixelPaint 2 and Studio/8 close by. Switching between these two programs is as easy as changing brushes.

Student Responses: Averages



Our testers independently graded key aspects of each program, but their responses were generally consistent. The chart doesn't necessarily convey the raw power of each application but instead reflects the interaction of the user with the software. Photon Paint, for example, is powerful, but it scored poorly because its capabilities are difficult to learn and use.

Directory

Cricket Color Paint 1.0
Cricket Software
40 Valley Stream Parkway
Malvern, PA 19355
(215) 251-9890

Modern Artist 2.0
Computer Friends, Inc.
14250 N.W. Science Park Drive
Portland, OR 97229
(503) 626-2291

Photon Paint 1.1
Microillusions
17408 Chatsworth St.
Granada Hills, CA 91344
(800) 522-2041
(818) 360-3715 (in CA)

PixelPaint 2.0
SuperMac Technology
485 Potrero Ave.
Sunnyvale, CA 94403
(415) 348-8400

Studio/8 1.0
Electronic Arts
1820 Gateway Drive
San Mateo, CA 94404
(415) 571-7171



Marcie used Studio/8's color gradients on many elements. She then worked with the brush in the Smooth and Blend modes. These happen to be Studio/8's weaker tools.



Rom took advantage of color blends and used the Tinted Ink mode to make the glass appear transparent. He used brushed-on gray shades extensively in the clouds.



Teddy used gradients primarily in the soap and preferred to brush on paint in customized colors. He used tinting to make the glass transparent and to add shadows.



Thomas made moderate use of gradients and added careful brushwork for accents and other depth effects. He painted the bevel around the mirror by lightening the mirror's borders.

Objects created with Studio/8's Bezier-curve and polygon tools can be edited until they're in place. There's also a single-bend curve tool with a single start and end point, and a middle part that bends as much as you want. It's excellent for getting quick curves without dealing with the technicalities of Bezier curves.

This program's masking function is absolutely the best around. Use any of the selection tools and modes to

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Disk Fit 1.5 53.
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Sentinel 2.0 88.
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NetPrint 2.0 117.
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Xerox (Datacopy)
AccuText 745.

Zedcor, Inc.
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DeskPaint/DeskDraw 2.0 65.

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The **A+ Mouse** uses infrared light reflected off a special pad to track mouse movement. Mouse Systems asserts that the absence of moving parts, such as a rolling ball, makes its optical mouse more durable and gives it a smoother movement than other mice. The movement is pleasant, but it's debatable whether it boosts productivity. The relative movement and clicking action feel similar to what the standard Mac mouse offers. Precision for small movements of MacDraw objects is somewhat improved. One drawback is that you must use the A+ Mouse with its own pad, so forget about saving space on your desk by mousing on top of your manuscript. ADB and non-ADB versions are available. Non-ADB version, $99.95; ADB version, $129.95. Mouse Systems, Inc., 47505 Seabridge Drive, Fremont, CA 94538; (415) 656-1117.

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Grappler C/Mac/GS 77.
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Mice without Balls

Popular appliances attract innovation like flies to a barbecue, and the mouse is no exception. Several devices that are basically mice have been marketed with some variations in their design and operation. The shape of the mouse case has been tampered with, and alternatives have been tried to the rolling-ball mechanism for tracking mouse movement. Finally, one product has drastically reduced the size and range of the mouse's motion, making it virtually a stationary pointing device.



Felix is a pointing device with a fixed base and a handle that moves around a small area on top of the base. The action is remarkably smooth, given the small area of movement in comparison to the screen. There's no need to "brush" with the pointer to move across the full screen. However, those who are prone to setting the mouse tracking speed to fast will find that the cursor "snaps" across the screen, a not very favorable effect when precision is needed. The footprint (5.75 inches square) is at least as small as the typical user's minimal mousing area, so it can be a space saver. The right and bottom edges of the base are sloped gradually for greater comfort (for right-handed users, not lefties), and the small range of movement reduces arm fatigue. The button, located on top of the pointer handle, clicks much like that of the traditional mouse. Software in the Control Panel provides some useful tools, including the abilities to specify a smaller movement area on-screen and the current window as the movement area. There is also a drawing setting for precise absolute movement. $169. ALTRA Technology, Inc., 5427 Telegraph Ave., Suite X, Oakland, CA 94609; (415) 547-7300.



The **A+ Mouse** uses infrared light reflected off a special pad to track mouse movement. Mouse Systems asserts that the absence of moving parts, such as a rolling ball, makes its optical mouse more durable and gives it a smoother movement than other mice. The movement is pleasant, but it's debatable whether it boosts productivity. The relative movement and clicking action feel similar to what the standard Mac mouse offers. Precision for small movements of MacDraw objects is somewhat improved. One drawback is that you must use the A+ Mouse with its own pad, so forget about saving space on your desk by mousing on top of your manuscript. ADB and non-ADB versions are available. Non-ADB version, $99.95; ADB version, $129.95. Mouse Systems, Inc., 47505 Seabridge Drive, Fremont, CA 94538; (415) 656-1117.

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Hands-Free Mice

The ultimate in convenience for the home-row keyboarder is never to have to touch the mouse. Hands-free input devices have a pointer device that is worn on the head, with a receiver mounted on the computer. The system tracks the user's head movements and translates them into mouse movements. The user activates the mouse button by blowing into a mouth tube, which trips a pneumatically activated switch. Hands-free mice offer keyboard emulation; an image of the keyboard appears on-screen, and the user points and clicks to select characters.

Users who have little or no use of their hands are the main market for these input devices. These units are expensive, so you must either *require* hands-free manipulation of the mouse pointer, or you must really hate taking your hands off the keyboard.



The **HeadMaster** uses ultrasound signals emitted from a headset to determine the position of the user's head. The puff tube for the mouse button is built into the headset. A few hours' practice is all you need to learn how to move your head. The on-screen keyboard appears as a couple of rows of characters across the bottom of the screen and stays on top of any open window. Typing on this keyboard, however, is slower than the hunt-and-peck method. Versions are available for the 512K, Plus, SE, and Mac II. $995. Prentke Romich Company, 1022 Heyl Road, Wooster, OH 44691; (216) 262-1984.



The **FreeWheel Pointer** determines the user's head position by bouncing infrared light off a small, lightweight mirror on the user's forehead. The headset needs no cabling to connect it to the computer. The compact receiver unit is typically placed on top of the monitor, and the puff switch can be mounted on a headset, gooseneck, or other convenient place. The on-screen keyboard has a standard arrangement, and you can type a key simply by holding the pointer on it for a certain length of time. The keyboard window always lies on top of all other windows and can be resized. The extensive manual provides information on assisting disabled users with the system. $1,095 for Mac II and SE, $150 for ADB adapter. Pointer Systems, Inc., One Mill St., Burlington, VT 05401; (802) 658-3260.

Jane Berliss and Peter Borden are project managers for the Information Section of the Trace Research and Development Center, which investigates ways to allow people with disabilities to use computers.

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There are many hard drives on the market, but there is only one Hammer. The drive MacWeek dubbed "one of the best products on the market." The drive MacUser Labs rated as "the fastest drive for Macintosh..." The drive synonymous with superlative performance and reliability. The Hammer is now available in a variety of sizes to meet your requirements. **Hammer**™ external hard drives available at 188, 300, 600, & 1000 MB. 10.7 - 18 ms access time. **PocketHammer**™ compact external drives available at 40, 80, 100, & 175 MB. 15 - 19 ms access time. **Hammer Internal** drives available at 91, 188, 300 & 425 MB for Mac II/IIx and at 40, 80, 100, & 175 MB for Mac SE, SE/30, and IIcx. 9 - 19 ms access time. All Hammer drives come with extensive utility software and are AppleShare® and A/UX® ready. For more information on the drives with impact, contact your local dealer or call us at (415) 474-8055.

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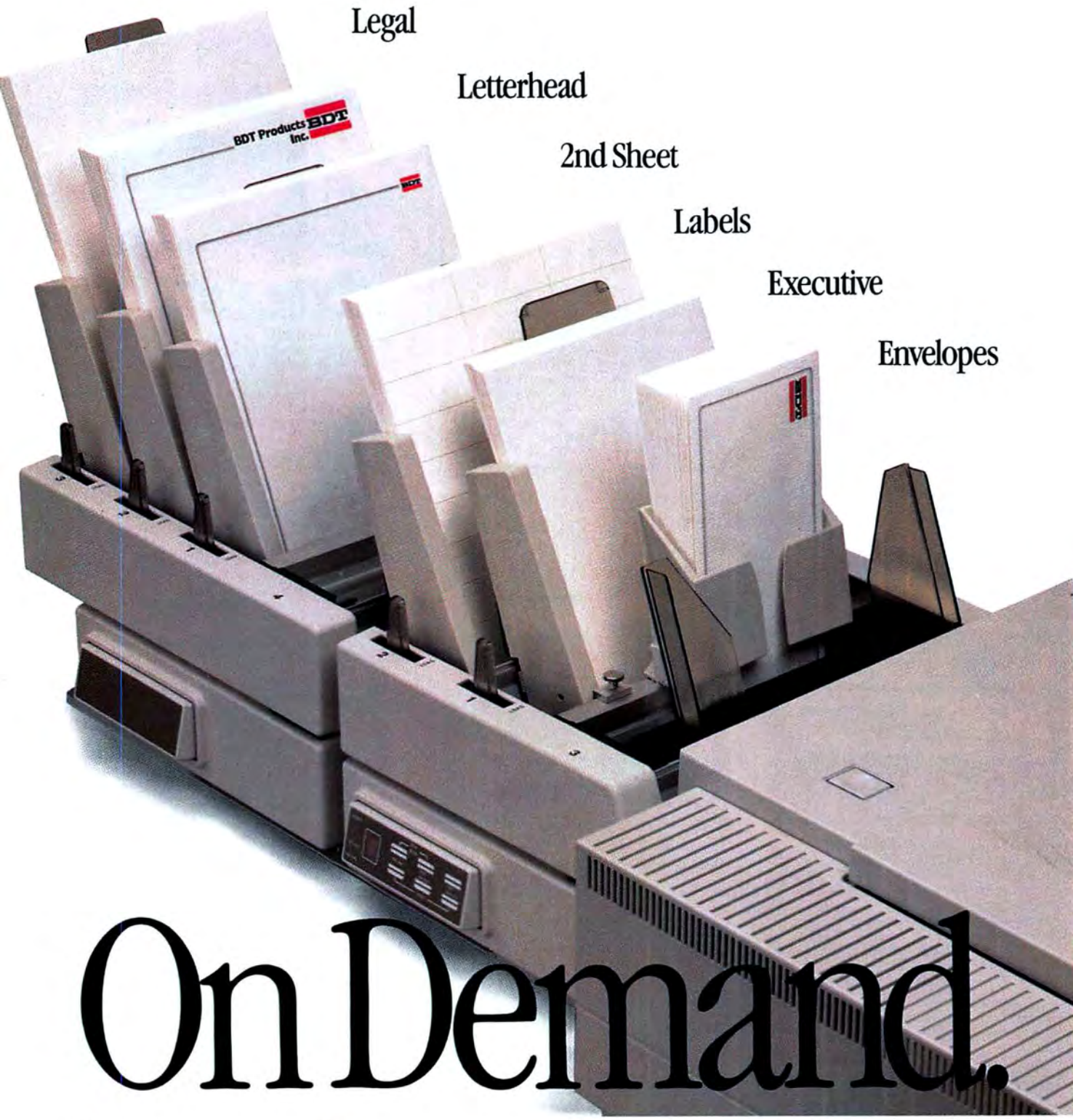
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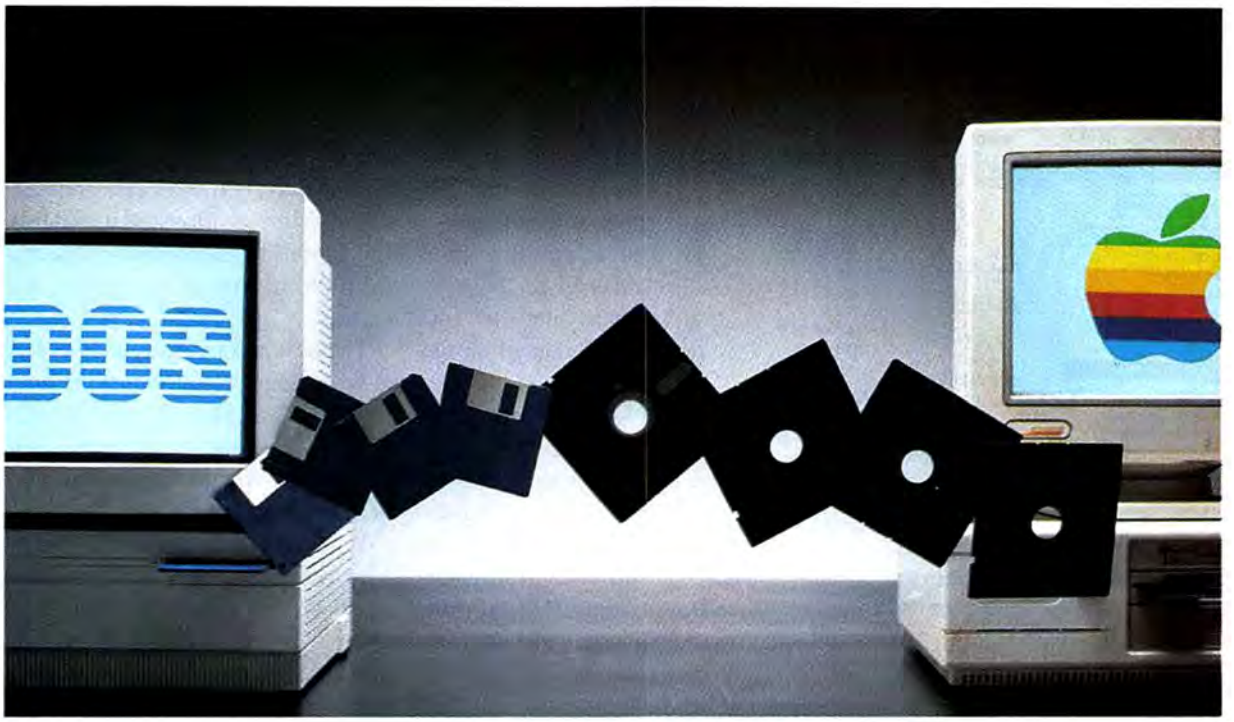
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Exchanging complex files between Macs and PCs? Powerful translators can keep that file formatting intact on both sides of the silicon curtain.

PC to Mac and Back

By John Rizzo



PHOTOGRAPHY: WALTER JEBE II. ILLUSTRATIONS: K. DANIEL CLARK

You're sending a proposal to clients in Tokyo. With all the air and sea carriers available, you have many delivery options. But your business deal won't go anywhere unless someone translates it into Japanese. It's the same with the Mac and PC. There are many ways to connect the two systems, but all the wire in the world won't let MacWrite translate a WordStar file and read it.

Moving files between a DOS machine and a Mac is easy with an AppleTalk network because your Mac is already compatible with AppleTalk. For your PC to access an AppleTalk network, you need to load it with an AppleTalk board (from Apple or the TOPS Division of Sun Microsystems) and file-transfer software such as AppleShare, TOPS, or Farallon's Timbuktu. Or you can connect to a PC network over a bridge. If you don't have access to a network, you can add an Apple or Dayna floppy-disk drive that reads DOS disks to your Mac. Or you can connect a PC and Mac directly through their serial ports or via a phone line.

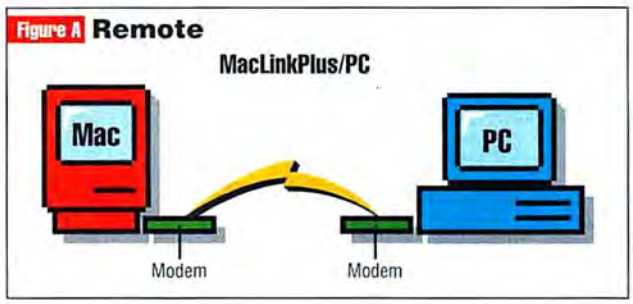
But you don't want a straight ASCII transfer with strange characters appearing where formatting should be. You want to retain the boldface, underline, margin, and other formatting information you've put into the original documents, and you don't want new characters to appear. You need a translator.

Translators are available that can convert files to and from most popular program formats on either side of

the silicon curtain. Most can translate as well as transfer files, sometimes in a single step. I tested Apple File Exchange (AFE), MacLinkPlus, LapLinkMac, and QuickShare with the different hardware combinations that you can use to transfer and translate data. Here's what I found.

AFE and MacLinkPlus

The first place to look for translation software is on the System disks that came with your Mac, which is where you can find Apple File Exchange, a program that would be worth buying if it were not free. Apple has been including AFE on the System disks since October 1987. Upgrading an earlier version of the System to a version that includes AFE costs $49.95.



AFE looks and acts like Font/DA Mover (see Figure 1). First choose the source and destination disks, then highlight the file to be transferred, and finally click on Convert and Transfer. The program can access any floppy-disk drive attached to the Mac and any network volume mounted on the desktop.

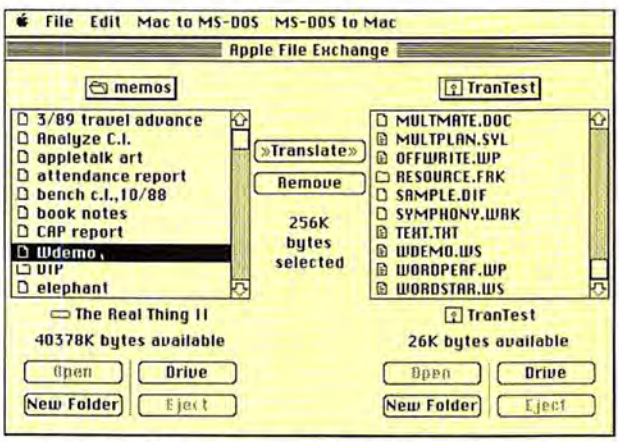


Figure 1: Shipped free with every System disk, AFE offers a simple interface, access to any disk mounted on the desktop, and the ability to use MacLinkPlus translators.

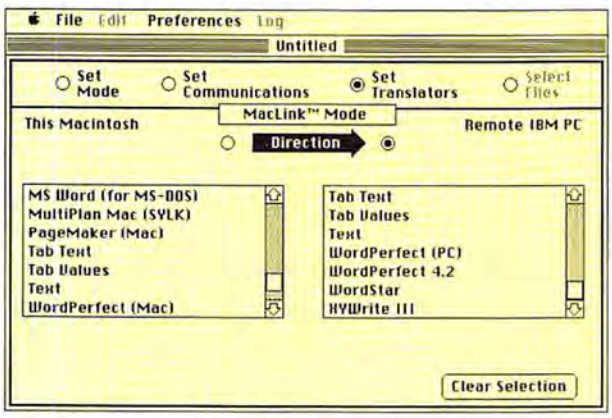


Figure 2: MacLinkPlus is still the industry-standard Mac-to-PC file-transfer software. MacLinkPlus/PC includes dozens of translators and the ability to be used locally, over a network, through a serial connection, or through a modem. DaynaFile and TOPS both ship with versions of MacLinkPlus.

AFE comes with two translators. One is a generic text translator that translates from Macintosh to MS-DOS or ProDOS (Apple II) file formats but does not retain formatting information. The second translates between MacWrite and DCA or RFT, two common DOS word-processor formats, keeping text formatting intact. You do, however, have to remember to save the DOS files in either DCA or RFT format.

One of the great things about AFE is that it can also use DataViz's MacLinkPlus translators, which you can buy separately from the full MacLinkPlus/PC program. Loading these translators into AFE is a simple matter of putting them into the AFE folder and installing them on AFE's Mac-to-PC and PC-to-Mac menus with the Other Translators menu item. With these translators loaded into AFE, you can translate data files directly from one program's file format to another's — directly from WordStar to MacWrite, for example.

The best part of MacLinkPlus has always been its translators. It now has 75 PC-to-Mac, 72 Mac-to-PC, and 15 Mac-to-Mac translators, such as Works WP to Word 3.0 and WriteNow to Works.

What can you do with 75 PC-to-Mac translators? Well, MacLinkPlus translates to and from WordStar, DisplayWrite, Microsoft Word, MultiMate, OfficeWriter (including versions 5 and 6), WordPerfect (including 4.2 on the PC and 1.0 on the Mac), XyWrite III, and DEC's WPS-Plus/VMS word processor. And it automatically recognizes Mac PageMaker files from versions 2 and 3 and translates them into the DOS version.

And that's just the word-processing and page-layout programs. For graphics, it converts PC .TIF files to Mac TIFF files and PC PaintBrush to PICT. And it converts files from all the major PC databases and spreadsheets to Mac database and spreadsheet formats as well as to an assortment of standard formats, such as WKS, SYLK, tab-delimited, and comma-delimited.

AFE's simple interface and MacLinkPlus' translation power are a great combination. But for only $40 more, you can get the full MacLinkPlus/PC, which transfers and translates files over a modem. The program has an answer mode that automatically accepts files from another Mac. It can also transfer files serially and comes with a Mac-to-PC serial cable. The MacLinkPlus interface is more complex than AFE's but requires only a few minutes to learn. And, like AFE, MacLinkPlus/PC translates and transfers files in a single step (see Figure 2).

Whether you are using MacLinkPlus/PC or AFE, MacLinkPlus translators simplify translation. No other translation package offers as many direct translators or retains text-formatting information (boldface, italics, underlines, margins, and paragraphs) as cleanly and consistently.

LapLinkMac

Like MacLinkPlus, LapLinkMac comes with a serial cable to connect a PC to a Mac. But the similarity ends there. The greatest difference between the programs is that with LapLinkMac all translating is done on the PC.

LapLinkMac was originally designed to move files between PC laptop and desktop computers. To add Mac-to-PC translation, Traveling Software wrote a serial-connect utility for the Mac and the Mac translators for the PC. Unfortunately, the company did not integrate file translation and file transfer, so they are two separate steps, leaving you with two copies of a file on your PC — the original Mac version and the translated PC version.

LapLinkMac is also much more limited than MacLinkPlus in the number of direct translations it can perform. On the Mac side, it recognizes only Word and WordPerfect. (Traveling Software planned to release a new translator by September that included MacWrite.) It does better on the DOS side, translating to and from DisplayWrite, Word, MultiMate, WordPerfect, WordStar, and XyWrite. This is the extent of its direct translations, however.

Furthermore, LapLinkMac translations are not as clean as MacLinkPlus'. Remember the WordStar tab ruler, (----!----!----!----)? A WordStar-to-Word translation leaves this ruler at the top of the Word document (the boldface and italics remain intact).

Going the other way, the Word-to-WordStar translation adds another step: You have to save the Mac Word file in DOS format. If you don't, you get the cryptic error message "error obtaining memory," which isn't particularly useful. Mac users might mistake it for a cry for more RAM from the PC.

One advantage of LapLinkMac is that running the translator on the PC frees up your Mac. LapLinkMac's serial-connect utility on the Mac runs in the background under MultiFinder; MacLinkPlus and AFE do not. But even here you must be careful. The Mac-to-PC transfer can be interrupted if you do some routine operations in the foreground, such as opening a DA or an application. For instance, when I opened a Word file on my Macintosh during a transfer, the transfer operation stopped and had to be restarted.



Figure 3: Unlike other Mac-to-PC programs, LapLinkMac is text-based and runs on the PC. The Tree screen shown here helps PC users find a folder on the hard disk of the Mac, which is connected by serial cable.

LapLinkMac has some nice features. For example, you can view the text content of Mac files from your PC, although without formatting. To choose Mac files to transfer, you issue LapLinkMac's Tree command, which creates a tree diagram of the folders and files on the Mac disk you've selected (see Figure 3). You can then select a file, using the arrow keys instead of typing the path to the filename. (The path is a list of the folders you need to open to get to the file, separated by colons.) But you don't even need to use the Tree command if you use a Mac file called Start LLMac to determine which Mac folder you want to open. When you double-click on this file, it starts LapLinkMac, and the files in that folder appear in the LapLink program folder on the PC.

LapLinkMac is not difficult for

Figure B Serial connection



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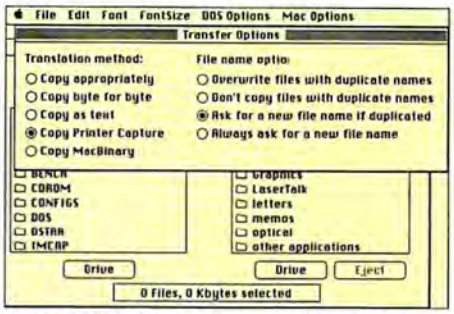


Figure 4: QuickShare gets good performance by using a SCSI connection to a PC. Although the translators are weak, QuickShare gives Macs access to PC networks and allows Macs to share PC hard disks and mount them on the desktop.

experienced DOS users to learn, but what is accomplished with a single mouse click in MacLinkPlus requires a series of keyboard commands in LapLinkMac. For instance, to choose a translator with MacLinkPlus, you click on Choose Translators and then highlight the ones you want. (AFE is even easier because it displays only those translators pertinent to the files you're translating.)

To choose a translator in LapLinkMac, you have to get to the main screen, choose the Option command, choose the X-lators command, use the arrow keys to set From and To markers on word-processor types, and then quit twice to return to the main screen.

Even PC users will find the X-lators screen confusing. It presents a list of word processors with version numbers that correspond only to PC versions of the programs. To select the Mac versions, you have to choose the relevant program listing with the highest *PC* version number. The only exception is if you want to use the Mac version of Word. In this case, because of a software bug, you have to select version 3.0 — not the highest-numbered version, 4.0. (Traveling Software planned to correct the X-lators screen problem in its summer release.)

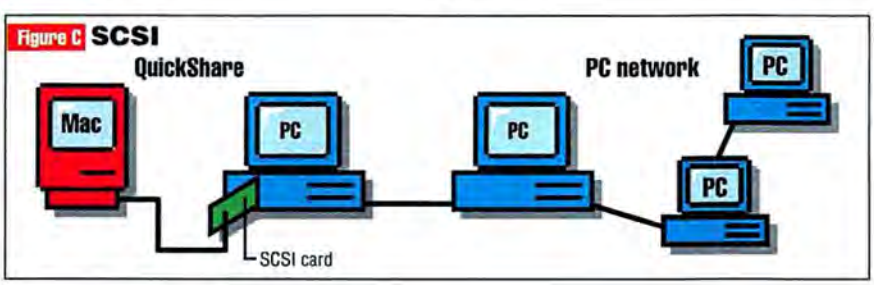
QuickShare

QuickShare from Compatible Systems is unique in that it connects the Mac and PC through SCSI (a card for the PC is included). This scheme works well, but, unfortunately, the software is limited.

Setup is easy. You plug in QuickShare's PC SCSI board, connect it to your Mac's SCSI port, and install software on both machines. Even Mac users who have never seen a PC should be able to use the QSINST PC installation program. The PC with QuickShare has no problems sharing the SCSI bus and worked fine even when I had it daisy-chained with three other SCSI devices. Unfortunately, the translation software is weak.

You do the file transfer and translation on the Mac with an application called PC Transfer. QuickShare has no specific translators as do LapLinkMac and MacLinkPlus. Instead, you get several low-level options: Copy Appropriately, Copy Byte for Byte, Copy as Text, Copy Printer Capture, and Copy MacBinary (see Figure 4). None of these options except Copy Printer Capture retain boldface, italic, underlining, or other formatting information, and extra characters are often inserted into translated documents.

Copy Printer Capture mode retains some of your formatting but is a bit trickier to use than the other modes. After running the QSPC program on the PC, you use the Print command in your DOS word processor, which produces a *captured* file. (You can also capture a screen shot of a text or graphics document.) To translate this file to the Mac, use PC Transfer in the Copy Printer Capture mode. Graphics become MacPaint files, and text



Beta Watch: Beyond DOS

MacLinkPlus, already the most complete translation package available, is continuing to expand its capabilities beyond Mac-to-PC translation. The beginning of this expansion occurred when DataViz turned its sights to Wang word processors, releasing MacLinkPlus/Wang VS and MacLinkPlus/WangOIS (priced from $395 to $895, depending on the Wang setup).

DataViz is now promising to ship a souped-up MacLinkPlus/PC, with a host of new translators and features. It should be out by the time you read this. With the new version, you'll be able to use the MacLinkPlus translators from within Claris' MacWrite II. As with Apple File Exchange, all you need to do is put the translator file in the same folder as MacWrite II. You can then read, write, and save your files in foreign formats without leaving MacWrite. Take note of Claris' terminology, however: It calls translators *filters*, a holdover term from the mainframe world.

In addition to the DEC WPS-Plus/VMS word-processor translator currently included with MacLinkPlus, the new version will have translators for the NeXT and Sun UNIX platforms. (It will come with an extra serial connector to make the Macintosh-to-NeXT connection.) The new MacLinkPlus will give you a list of what is being displayed on the desktops of the PC, NeXT, and Sun machines to which your Mac is connected. This is an interesting development, because the NeXT operating system was still in beta-test at press time.

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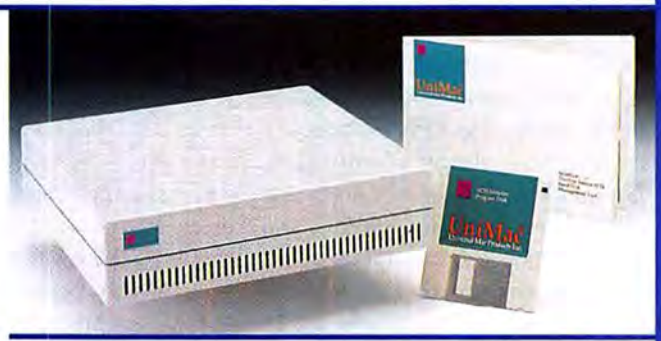
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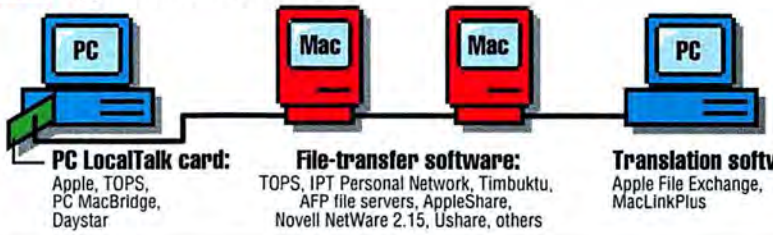
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documents become MacWrite files. (This is a one-way process only.) This print-capture ability is also available separately from QuickShare as the inexpensive AnyText and AnyGraph packages. (Not surprisingly, MacLinkPlus also has a printer-capture capability.)

In addition to giving your Mac access to your PC's files, QuickShare lets you create up to eight virtual disks — that is, disk space on any PC or PC network that mounts on your Macintosh desktop. So if you have a large hard-disk drive on your PC, the PC and Mac can share it, saving you the cost of buying one for your Mac. And since it's a SCSI connection, as with other Mac hard drives, the data-transfer rate is very good.

Figure D **AppleTalk network**



The Hard and the Soft of It

All file-transfer methods are not created equal, so which software you use depends on your method of moving files (see Table 1 for a comparison of Mac/PC file-translation features). The slowest way is using MacLinkPlus over a modem (between 1,200 and 19,200 bps). Still, it lets you transfer and translate files to and from your computer at work while you're at your cabin in the woods (as long as you have phone service).

MacLinkPlus and LapLinkMac offer a PC-to-Mac serial connection that transfers data at up to 57,600 bps, but some PCs can't handle this speed. This method isn't much better than a modem connection, and the two machines must be within ten feet of each other.

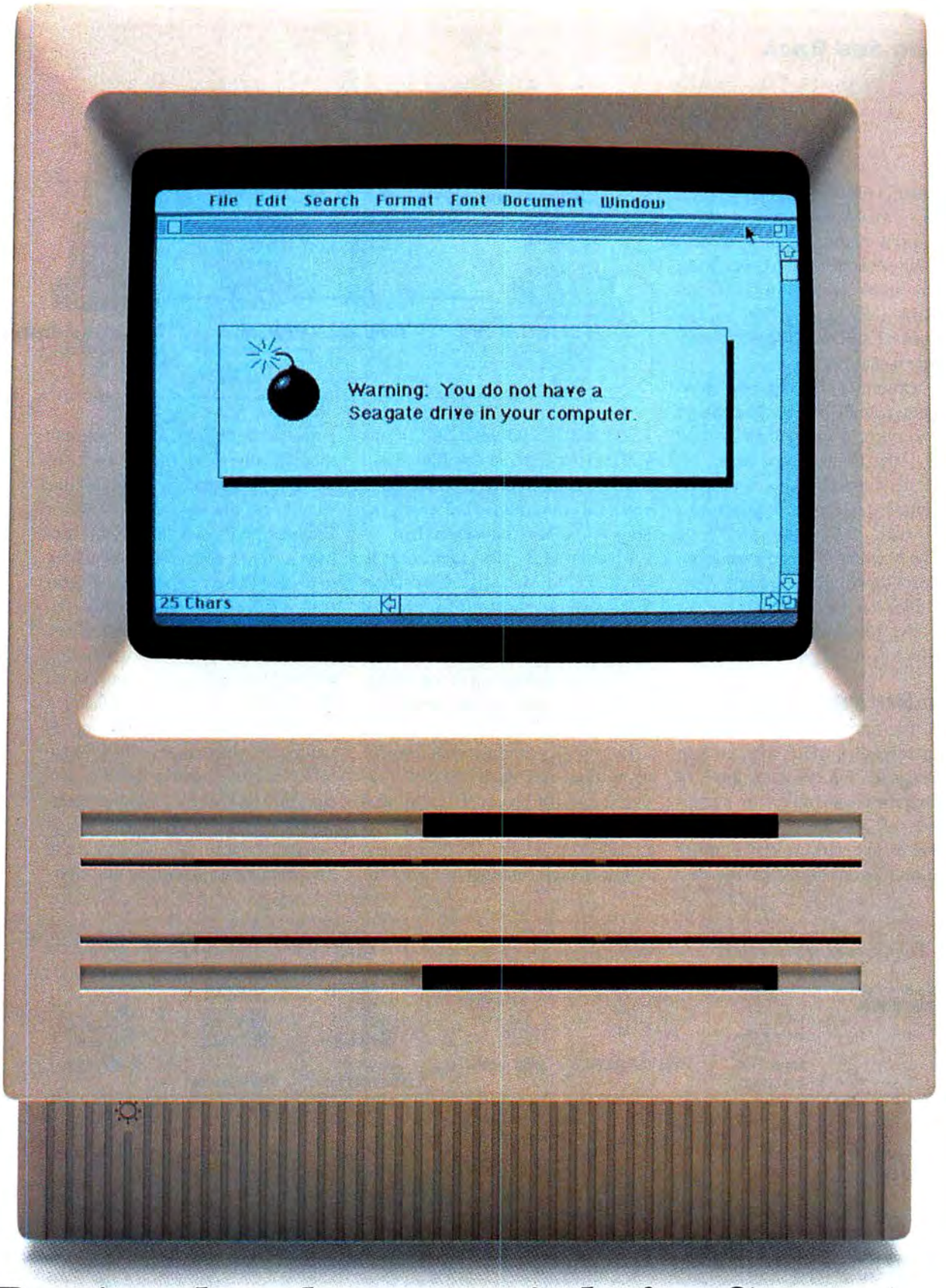
LocalTalk, which gets a bad rap for being slow, is a much better alternative at 230,400 bps. AFE and all versions of MacLinkPlus can run over a LocalTalk network with file servers. If you're lucky enough to have Ethernet cards in your Macs, you can theoretically move files at up to 10 Mbps. Unfortunately, LapLinkMac cannot be run over LocalTalk or Ethernet on PC networks. LapLink-Mac's serial connection to a Mac gives the PC access to AppleShare-compatible file servers, but this is an agonizingly slow way to transfer files.

A TOPS distributed file-sharing network running on a Macintosh with FlashBoxes can transfer data at 770,000 bps or at LocalTalk speeds without FlashBoxes. The TOPS Mac software comes with a desktop version of MacLinkPlus (without telecommunications features), which makes it a viable translation solution. The installation procedure and inter-

Table 1: Mac/PC File Translation: Features Comparison

Translate/transfer from Mac disk to	Apple File Exchange (Free with System)	MacLinkPlus/PC (Full version)	LapLinkMac (Runs on PC)	DaynaFile/ MacLinkPlus (Desktop version, w/ floppy drive)	TOPS/ MacLinkPlus (Desktop version, w/ TOPS)	QuickShare (PC SCSI connection w/ generic translators)[§]
Local Mac disks	✓	✓	†	✓	✓	
Apple PC 5.25	✓					
FDHD	✓	✓*	†	✓*	✓*	
DaynaFile	✓	✓	†	✓	✓	
AFP networks	✓	✓	†	✓	✓	
TOPS network	✓	✓	†	✓	✓	
Non-AFP PC networks			✓ (indirectly, from PC)			✓
PC 1-to-1 via cable		57,600 bps serial	57,600 bps serial			4,200,000 bps via SCSI
Remote via modem		✓				

* Using Dayna's DOS Mounter utility.
† No access to Finder-mounted disks from a Mac but can access Mac disks from PC.
§ Compatible Systems also offers separate print-capture utilities, AnyText and AnyGraph, which work with AFE, in which case the first column applies.

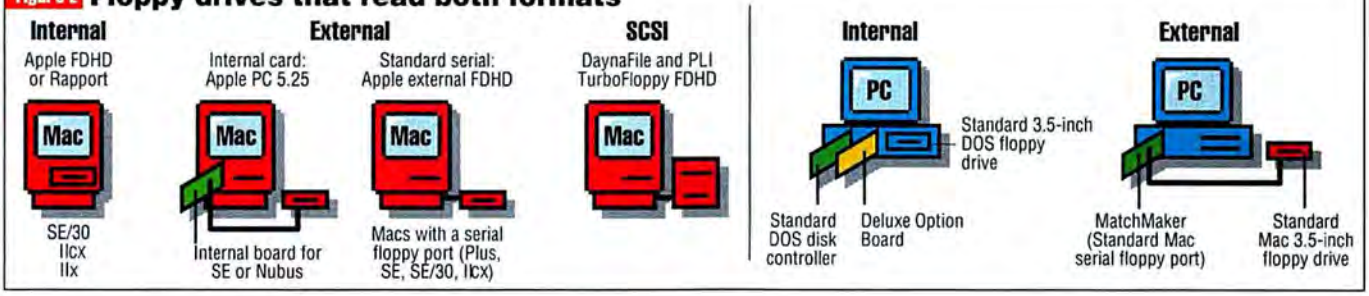


Don't take chances. Ask for Seagate.

Seagate

The first name in disc drives

Figure E Floppy drives that read both formats



face are a bit complicated, though.

QuickShare's SCSI connection is a speedy method of exchanging files, with a transfer rate of up to 4.2 Mbps, depending on the Mac. It also gives you access to file servers on PC networks. Although your Mac won't become a node, you can access files and set up virtual disks on PC hard disks. QuickShare would be an excellent alternative to serial connections if it came with direct translators or could be used with MacLinkPlus.

The Floppy Option

Despite all these high-tech network options, one of the easiest solutions to the problem of exchanging files is to have a floppy-disk drive that can read both PC and Mac formats. LapLinkMac can use PC floppy drives that read Mac disks (see "Mac Drives for PC Users" sidebar). For Mac users, I looked at three drives for the Mac that read DOS-formatted floppies — the DaynaFile, Apple's PC 5.25, and the FDHD drive built into all Mac SE/30s, IIcx's, and IIx's. Apple and PLI also make external FDHD drives, but I couldn't get them in time for this report.

DaynaFile is a SCSI device that runs on any Mac with a SCSI port. The drive mounts on the desktop and allows normal click-and-drag operations for copying files or creating folders, which become directories in DOS. AFE and MacLinkPlus perform translations with DaynaFile. (Dayna also sells a desktop version — minus the telecom features — of MacLinkPlus.)

Apple took an amazingly un-Mac-like approach with its Apple PC 5.25 drive. It can be accessed only through AFE (tough luck for MacLinkPlus fans!) and does not appear on the desktop. Connection to the Macintosh requires a card for NuBus or the SE slot. Apple PC 5.25 drive's per-



Figure 5: Five floppy drives that read DOS-formatted disks (starting bottom left, clockwise): This DaynaFile model reads both 5.25- and 3.5-inch DOS floppies and connects to the Mac's SCSI port. The Apple PC 5.25 connects to an expansion card on the Mac. PLI and Apple sell external versions of the FDHD found in the Mac SE/30, IIx, and IIcx.

PHOTOGRAPHY: PETER ALAN GOULD

Mac Drives for PC Users

Reading DOS disks is no sweat for Mac users. PC users who want to read Mac disks have some options too. Here are some inexpensive add-ons that enable your PC to read Mac disks.

The **Deluxe Option Board** is a hardware/software combination that enables a 3.5-inch DOS drive to read, write, and format 400K and 800K Mac disks. To let the PC know that you want Mac format, you insert an *m* in front of the normal DOS Directory, Format, and Copy commands. The board sits in an AT bus, supplementing the PC's disk controller. It works with 3.5-inch drives from Citizen, Teac, and Toshiba but does not work with the Mitsubishi 1.44 drive or Alps' drives.

The software works with the hardware to perform straight ASCII text transfers and some DOS backup functions. A PC backup program that works with the hardware to accelerate hard-disk backup and lets users back up copy-protected DOS disks is included as well. Deluxe Option Board, $159. Central Point Software, 15220 N.W. Greenbrier Parkway, Suite 200, Beaverton, OR 97006; (503) 690-8090.

The **MatchMaker** board takes a different approach: It gives the PC a port that accepts standard external Mac floppy drives. If you don't have a Mac drive, Micro Solutions can sell you one with MatchMaker.

The Mac drive appears on the PC as drive M and can be used to format, read, and write in Mac format. You can use normal DOS commands, including Directory. Since it requires a Mac drive, MatchMaker is a more expensive solution than the Deluxe Option Board, but it doesn't tie up a DOS drive. MatchMaker, $149; 800K Chinon floppy drive, $239. Micro Solutions, 132 W. Lincoln Highway, De Kalb, IL 60115; (815) 756-3411.

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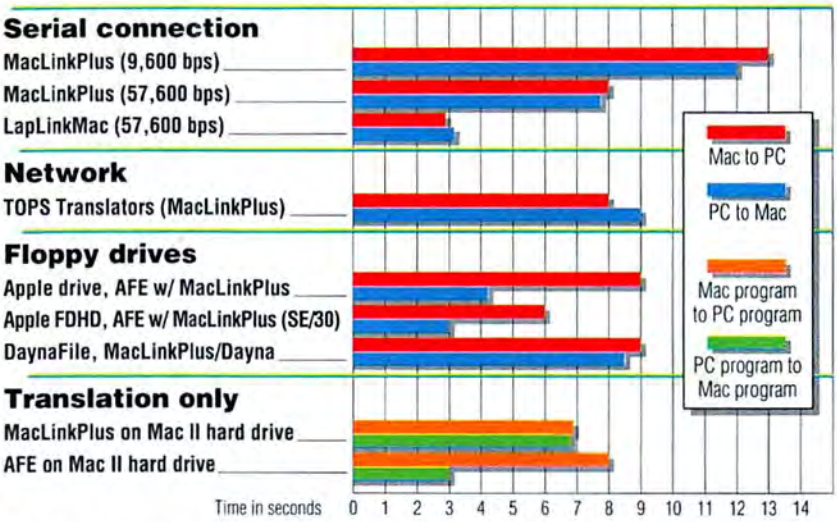


Table 2: A comparison of various hardware/software schemes to translate and transfer Microsoft Word on a Mac to WordStar on a PC, and vice versa. All tests used a Mac II except for the FDHD test, which used the SE/30. Most of the time for these transactions is taken by the file-translation process, not the transfer. Since AFE can't translate Word by itself, I used MacWrite, a simpler (and therefore faster) translation than Word.

formance is similar to DaynaFile's.

DOS floppies in Apple's built-in 3.5-inch FDHD, like those of the Apple PC 5.25, are accessible only through AFE. Fortunately, Dayna offers a utility called DOS Mounter, which puts a DOS floppy icon on-screen, as a normal Mac drive does. A bug in version 2.2 of the DaynaFile driver causes some problems with the DOS Mounter, however. Dayna will replace it with version 2.3 for free.

John Rizzo is technical editor at *MacUser*.

The Bottom Line

MacLinkPlus is the most comprehensive PC-to-Mac translation software available and is still the standard. I recommend using the MacLinkPlus translators, either purchased separately for use with AFE or in the complete MacLinkPlus/PC package, if you need telecommunications and serial abilities.

Both AFE and MacLinkPlus can work over AppleShare-compatible networks. If you buy TOPS, you get the MacLinkPlus translators with the Mac software. However, TOPS is an expensive solution if you need only a PC-to-Mac translator and you aren't planning to set up a TOPS network.

QuickShare is a great way to share hard disks with one or more PCs. But without direct translators, you'll spend more time cleaning up translated documents than you'll save on transfer time.

LapLinkMac is OK if you must run translation software on the PC. To raise it to the level of MacLinkPlus, LapLinkMac needs a Mac version, more translators, and an alternative to the slow serial connection.

Putting a DOS drive on your Mac is a convenient translation solution. DaynaFile is a better choice than the Apple PC 5.25, since it offers similar performance but doesn't use an expansion slot. To be ready for all DOS disks, use the dual drive with both 5.25- and 3.5-inch formats. The built-in FDHD drives on 68030 Macs work well for reading 3.5-inch DOS disks, but use Dayna's DOS Mounter utility to make them more Mac-like.

Given all these options, the bottom line is that you can forget your worries about Mac-PC compatibility. Whatever business programs you're using, there's probably a PC-to-Mac translator for you. Most likely, it's MacLinkPlus.

Report Cards

Apple File Exchange ★★★★

One of the utilities that comes free with the System. AFE offers a simple interface and works with a variety of data-transfer methods. Its best feature is that it works with current and future MacLinkPlus translators. By itself, its translators are limited to MacWrite generic text. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014; (408) 996-1010.

Apple PC 5.25 ★★★1/2

A drive that connects to the Mac and reads 5.25-inch DOS floppy disks. Unlike most drives that connect to the Mac, this one does not appear on the desktop. Access to DOS files is made through Apple File Exchange. It also takes up an expansion slot in your Mac. Requires Mac SE or NuBus slot. Drive, $399; board, $129. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014; (408) 996-1010.

DaynaFile 3.1 (hardware) and 2.3 (INIT) ★★★★★

A drive that reads 3.5- or 5.25-inch DOS floppy disks. The drive connects to a Mac SCSI port and appears on the desktop as do most Mac drives. Requires System 3.2 and Finder 5.3 or later. DF0104 Dual 3.5-/5.25-inch, $1,005; single drives, $650+, MacLinkPlus/Dayna, $125; DOS Mounter (for use with Apple FDHD drives), $89. Dayna Communications, 50 S. Main St., Fifth Floor, Salt Lake City, UT 84144; (801) 531-0600.

LapLinkMac 2.0 ★★★1/2

A file-translation package that runs on the PC and connects to the Mac via a serial cable. Not a bad program as far as DOS goes, but this version has some quirks. The PC-to-Mac translators concentrate on word processors, but there aren't nearly as many as in MacLinkPlus. $139.95. Traveling Software, 19310 North Creek Parkway, Bothell, WA 98011; (800) 343-8080 or (206) 483-8088.

MacLinkPlus/PC 3.05 ★★★★★

Offers more translations between more PC and Mac applications than any other file-translation software. The interface is easy to use, and the translations are clean. In addition to translating locally or over a network, the package can connect to a PC serially and via modem. Translators also work with Apple File Exchange. MacLinkPlus/PC, $195 (with telecommunications); MacLinkPlus/Translators, $159 (desktop version only); MacLinkPlus/WangVS and MacLinkPlus/WangOIS, $395 to $895. DataViz, 35 Corporate Drive, Trumbull, CT 06611; (203) 268-0030.

QuickShare 2.0 ★★★1/2

Connects your Mac to a PC using SCSI, enabling a Mac to access files on a PC or PC network. It also gives the Mac disk space on PCs, which can be mounted on the Mac's desktop and used as Mac disks. The file-transfer software provides generic text and graphic translations. Requires DOS 3.0 or later. $465. Compatible Systems Corp., 2900 Center Green Court S., P.O. Drawer 17220, Boulder, CO 80308; (303) 444-9532.

TOPS ★★★★

(For file-translation capabilities only. For a full evaluation, see "Making a Small Net Work," May '89.) A distributed file-sharing system for PCs and Macs that comes with TOPS Translators, a version of MacLinkPlus. Worth considering by those who need network file-transferring capabilities but a bit expensive and complex for those who need only file translation. Requires 512K RAM and DOS 3.1 on the PC. PCTOPS Macintosh, $249; TOPS DOS 2.1, $189; FlashCard, $239. Sun Microsystems, Inc., TOPS Division, 950 Marina Village Parkway, Alameda, CA 94501; (415) 769-9660.

Related Products

We were unable to test these file-translation products because of time constraints:

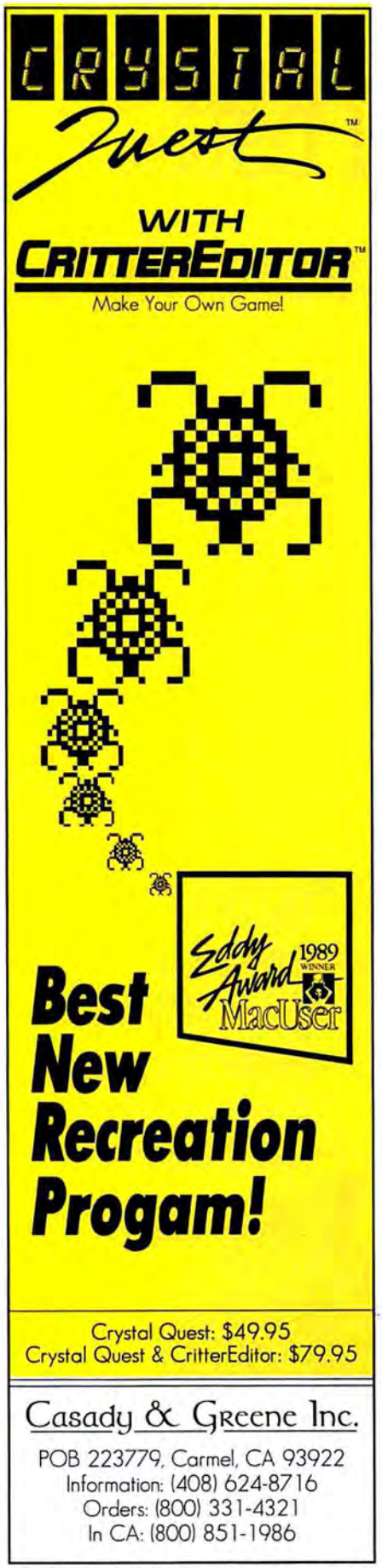
AnyText and **AnyGraph** are print-capture programs that work with Apple File Exchange. $95 each. Compatible Systems Corp., 2900 Center Green Court S., P.O. Drawer 17220, Boulder, CO 80308; (303) 444-9532.

Apple FDHD External Floppy Drive reads 3.5-inch DOS floppies. $629. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014; (408) 996-1010.

1st Port is file-translation software. $95. 1st Desk Systems, 7 Industrial Park Road, Medway, MA 02053; (800) 522-2286 or (617) 533-2203.

Rapport gives internal 800K drives read-only ability for low-density (720K) 3.5-inch DOS floppies. **Drive 2.4** adds write ability; it does not mount on the desktop. Reviewed July '89. Rapport, $295; Drive 2.4, $499. Kennect Technology, 271 E. Hacienda Ave., Campbell, CA 95008; (800) 552-1232 or (408) 370-2866.

TurboFloppy 1.4 FDHD external drive reads 3.5-inch DOS floppies. $499. Peripheral Land, Inc., 47421 Bayside Parkway, Fremont, CA 94538; (415) 657-2211.



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flat and four-color process printing. For a fraction of the time and cost of conventional methods.

The printer has the advantage of a 68020-based Atlas controller running at 16 MHz, so you can see your results faster. You can print an 8½"x11" page in just under one minute. An 11"x17" page in just under two. And the quality is excellent. The ColorScript 100 uses a thermal transfer process that produces true 300x300-dot-per-inch resolution.

New Model 20—more affordable and upgradable

The original ColorScript 100 is the Model 30, with 8 megabytes of memory, a 20-MB hard disk built in, and the ability to print up to 11"x17" pages.

The new QMS ColorScript 100 Model 20 is more affordable. It has 4 MB of memory and the ability to handle letter-size (8½"x11")/A4-size paper. It provides the same high-quality output as the Model 30, and can be fully upgraded to a Model 30 when your needs expand.

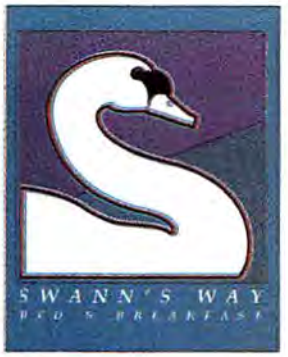


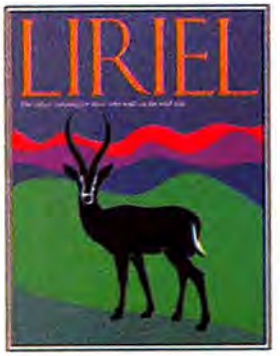
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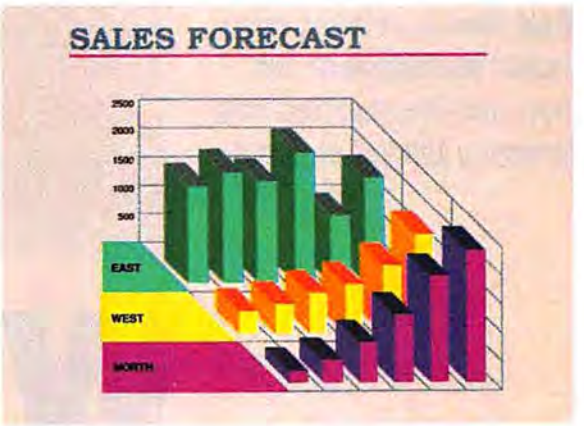
For more information on the QMS ColorScript 100, including a list of compatible software and information on financing, call 1-800-631-2692, ext. 223.





Pictured are just some of the ways designers are using the QMS ColorScript 100. The creative director at one design firm notes: "We're doing comps that used to take hours in minutes. The quality is fantastic." A computer design system manager in the Midwest says: "Our clients are getting more options, in less time, at lower costs."



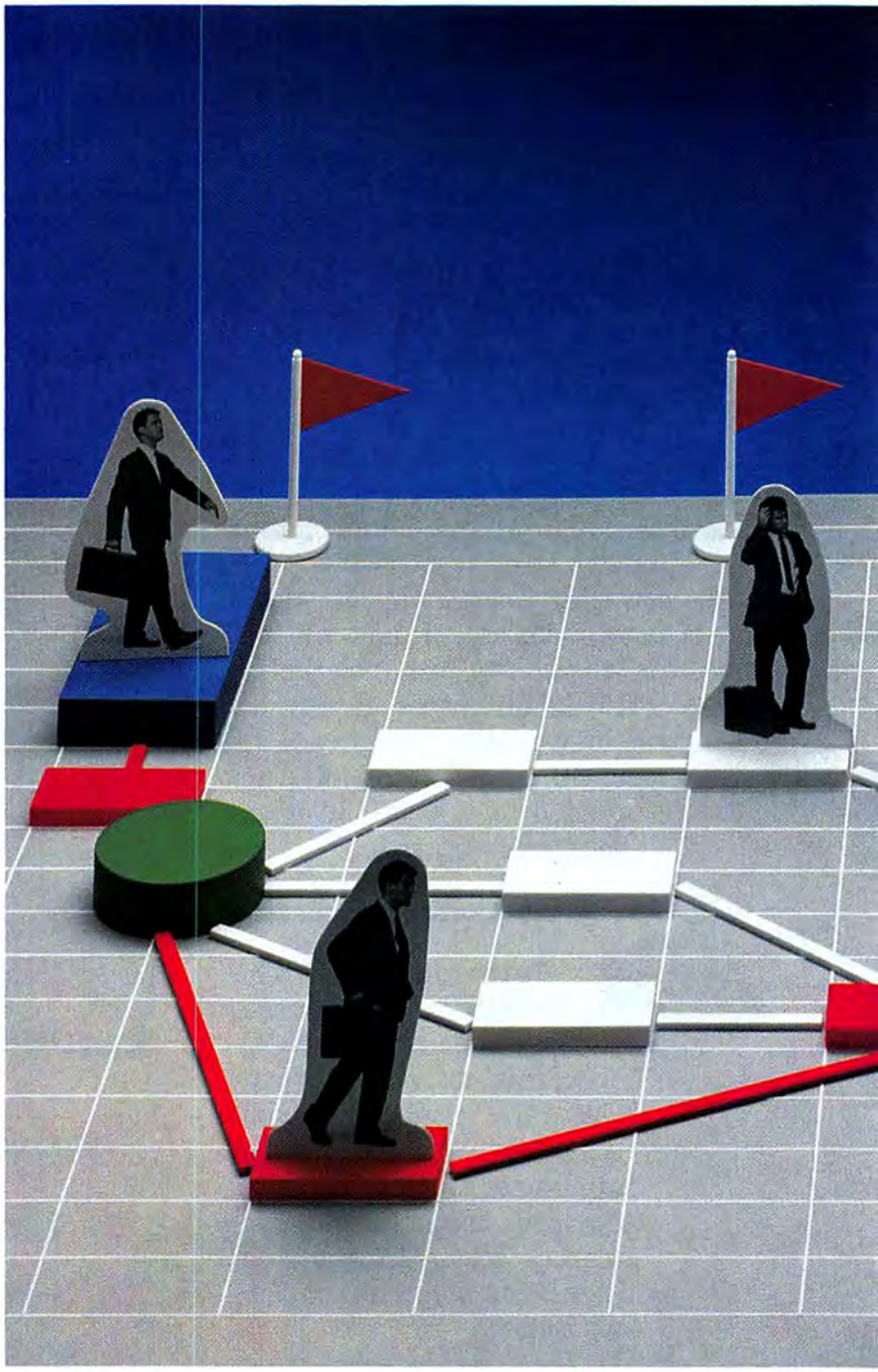


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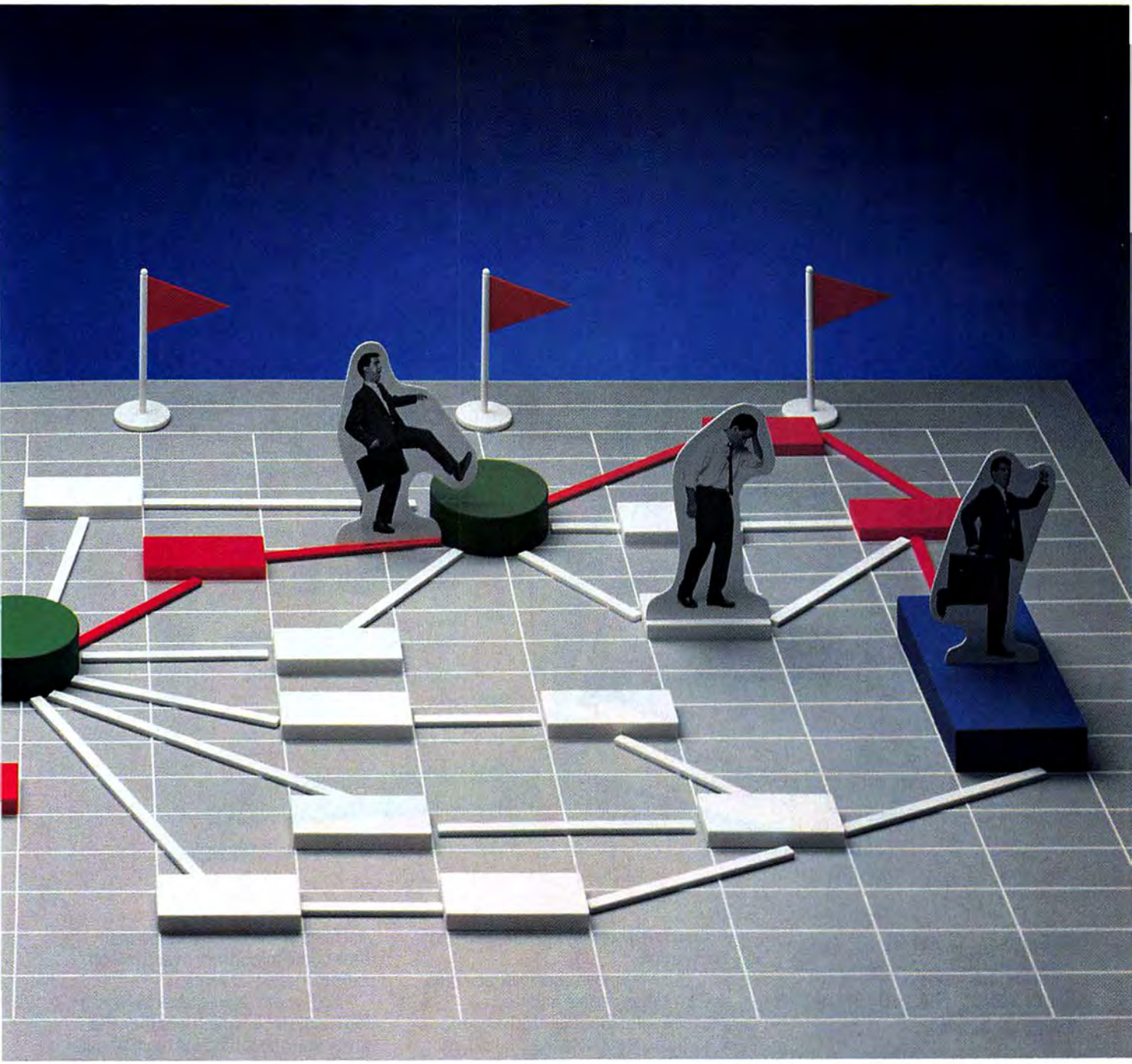
Critical Paths

When time is critical, good project management can show you the shortest path through a thicket of tasks.

When it comes to serious professional computing, few applications can flex a Mac's muscles like a high-end project-management system can. However, project-management tools run the gamut from simple data organizers with some basic graphics to massive relational databases that provide detailed management information and produce sophisticated graphic representations of a project's plan and status.

Most project-management techniques can be traced back to the U.S. Navy's Polaris missile program. In 1956, the Navy's Special Projects office was given responsibility for coordinating the development of the

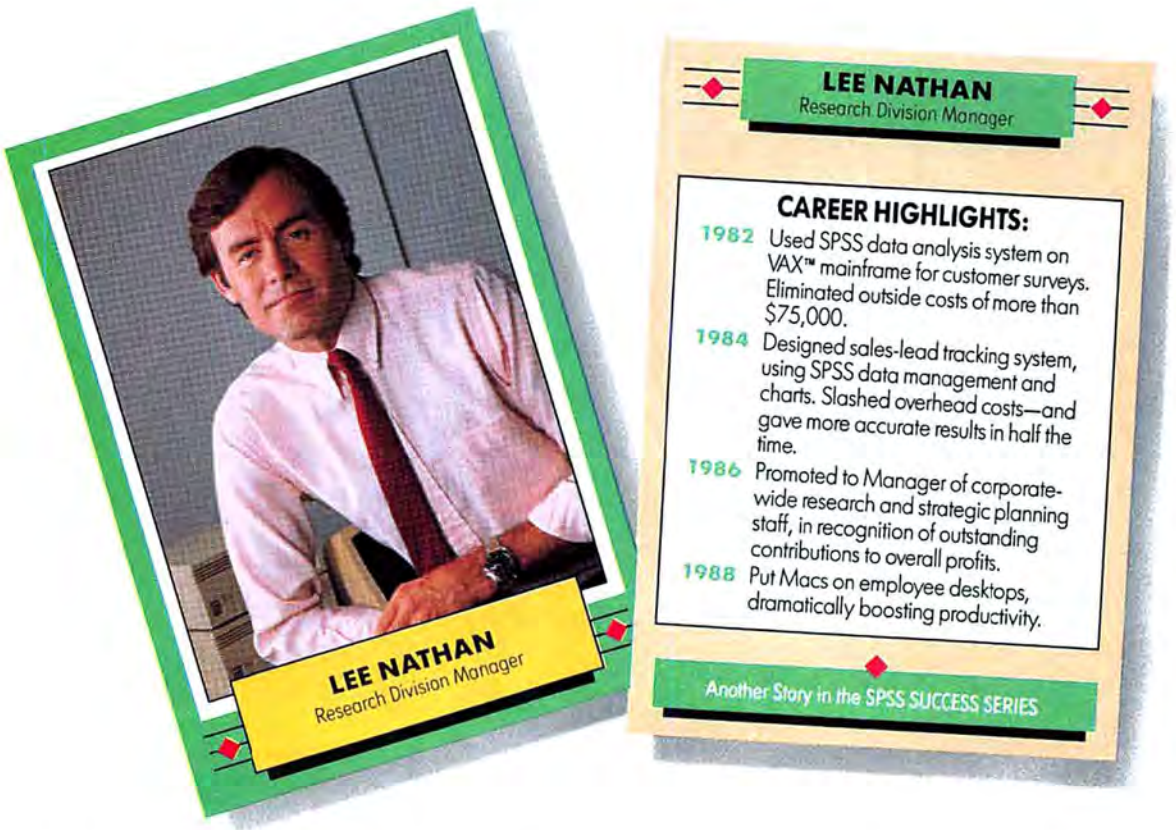
PHOTOGRAPHY: MEL LINDSTROM



weapon system. By the end of 1957, it was clear that traditional management techniques were inadequate for the complexity of the task. To solve the problem, a research team that included personnel from Lockheed's Missile and Space Division (the prime contractor for the Polaris missile program) and from the management-consulting firm of Booz, Allen, and Hamilton was formed. The code name for the task force, Project Evaluation and Review Task, later provided the name and acronym, PERT, for the techniques the team developed. PERT strategies depict the relationship of tasks within a project, without regard to priorities.

By Ken Landis

Big-league stats for the serious player.



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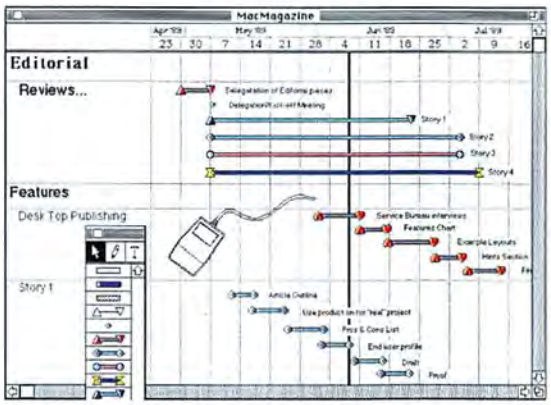
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A logical extension of PERT, the critical-path method (CPM), was developed by E. I. du Pont de Nemours & Co. Du Pont, working with computer specialists from Remington Rand, developed a technique that focused on activity-based networks and the relationships among the activities. The phrase "on the critical path," first applied to the construction of a chemical plant in 1958, refers to the shortest "distance" or time to complete a project.

A host of project-planning techniques have since been developed and have found their way into M.B.A. programs across the country. As these techniques have grown more sophisticated, so has the mathematics needed to construct them. That's where your Mac comes in. It doesn't get tired and make mistakes, it can draw the same picture a hundred times until it's exactly the way you want it, and it can do these tasks in a fraction of the time it would take you.



The Reviews phase in this FastTrack Schedule Gantt chart was collapsed to show a summary of the sublevel activities. The Toolbox offers an unlimited library of user-definable bar types and milestones.

The Macintosh project-management–software market is divided basically into two categories: simple outliners and schedulers, and project-tracking systems. Outliners and schedulers help organize your resources and produce Gantt charts to show you the structure of a project.

By comparison, full-fledged project-management systems not only plan a project but are also able to dynamically adjust plans based on actual performance and to give status reports. Caring for these systems is a monumental task, even for use in a small project. All scheduling and cost information must be kept current. If the system falls behind the project, its output becomes useless. These tools provide PERT and CPM planning techniques as well as basic management reporting on actual versus forecast figures for time and budget. Even so, the strength of these programs is their ability to construct a project-management plan rather than their ability to manage it. They assist you in establishing your work plan, but they don't tell you how to accomplish it. Project management at a high level is complex and still demands a fair amount of specialized knowledge on your part.

Outliners and Schedulers

Macintosh outliners, such as MORE II from Living Videotext, have been used to track projects as complex as the "Day in the Life" photography series by Collins Publishers, taking the projects from conception to binding. Outliners optimized for scheduling add specialized graphics such as Gantt bars and start/stop symbols to help you visualize the project's stages. Two of the more popular products in this category are FastTrack Schedule and Schedule Maker.

FastTrack Schedule is a classic example of an outliner and sched-

Scheduling Employees

Schedule Maker 2.0 doesn't deal in projects or tasks; it deals in people and resources and is for service organizations that must ensure that the right people and machines are working at the right time.

Schedule Maker uses Gantt-like bars to show the coverage provided by employee schedules. You select workers for a shift by querying the database. Employees can be scheduled for hour, half-hour, or 15-minute increments. The system automatically prevents double-shift scheduling for an employee on a single day, but this logic can be overridden for back-to-back shifts.

Schedule Maker automatically produces a financial summary of your schedule. The amount of time scheduled for each employee, multiplied by the employee's hourly wage, is automatically computed and compared with projected sales or with the amount budgeted for labor costs. Schedule Maker easily handles vacations, sick days, seven-day swing-shift schedules, and training time.

All the information stored in the employee database, as well as the schedules and financial reports, can be easily exported to Microsoft Excel, Word, or Works for analysis or for creating presentations.

Upcoming enhancements to Schedule Maker, due out by the time you read this, are focused on making the scheduling and updating process more flexible. The new version will prevent scheduling conflicts, calculate costs as a percentage of sales, mark workers for special days off, and perform a host of other new functions.



Schedule Maker uses a visual display of the scheduled hours. Clicking and dragging the draw bar lets you adjust an employee's hours.

If you don't see exactly what you're looking for, just ask.



System Saver® Mac, $99.95



Maccessories® SuperBase™, $49.95



Maccessories Tilt/Swivel, $29.95



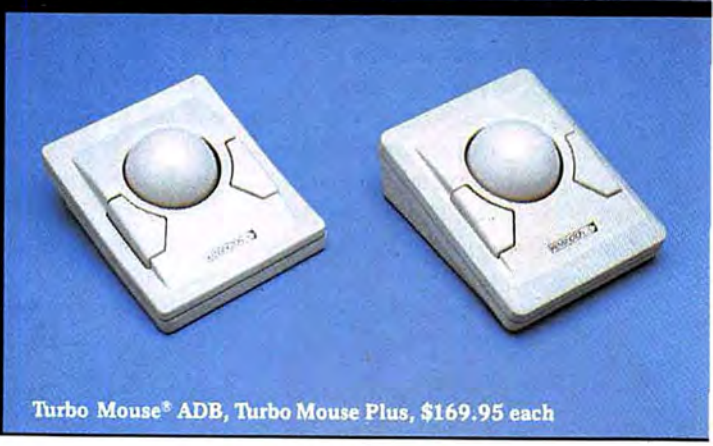
Macintosh II Stand and Extension Cables, Complete Kit $99.95, Separately $29.95 to $49.95



Master Piece® Mac II, $159.95



Power Backer™ UPS's, $399 to $1,399, Network Interface, $99.95



Turbo Mouse® ADB, Turbo Mouse Plus, $169.95 each



Large Screen Anti-Glare Filters For AppleColor™, Radius™, and Sigma Designs™ Monitors, $99.95 to $199.95

Macintosh II Monitor Stand, $99.95



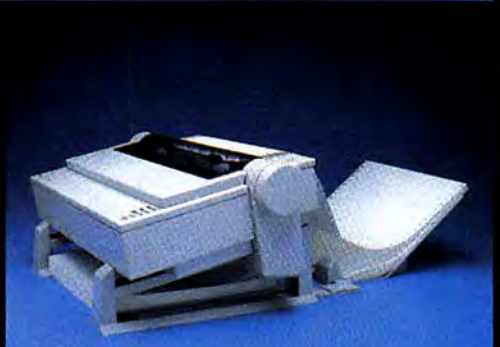
Maccessories Anti-Glare Filter, $49.95



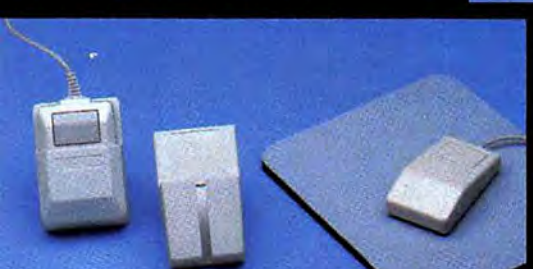
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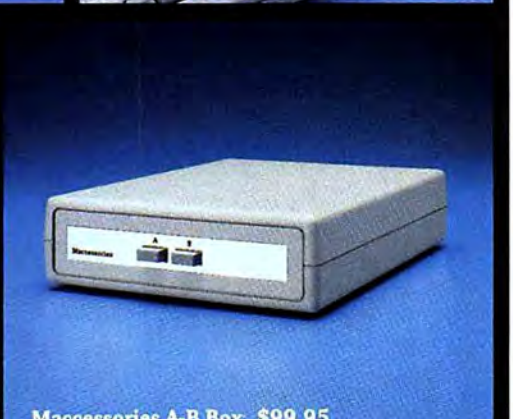
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Apple, Macintosh, MacPaint and HyperCard are registered trademarks of Apple Computer, Inc. Microsoft is a registered trademark of Microsoft Corporation. Full Impact is a trademark of Ashton-Tate Corporation.

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uler. The program allows you to enter tasks in a multilevel, indented format. Each group of tasks, whether milestones or phases, can be entered in detail and then collapsed for summary viewing. There is no limit to the number of levels you can enter for each activity. Dependent activities are adjusted automatically when you link or change precedent activities on the chart. Up to ten schedules can be open simultaneously, and activities are easily moved from one to the other.

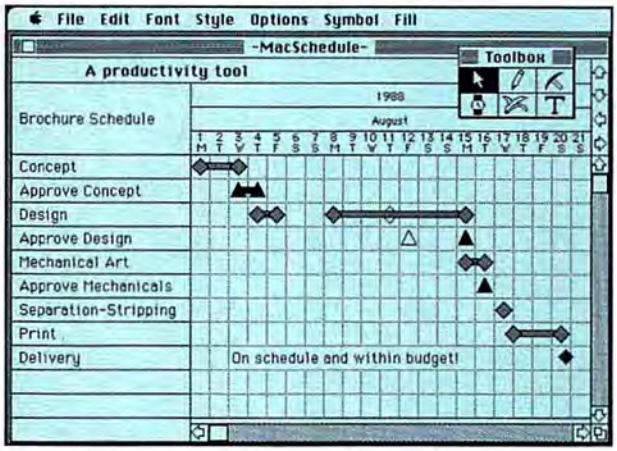
FastTrack Schedule puts color graphics to excellent use on a chart, making screen presentations a visual pleasure and easy to digest. Gantt bars, polygons, triangles, arrows, and other symbols are used to indicate start, stop, and other important dates and are easily integrated into charts. Text and graphics, drawn in directly or imported from other programs in either PICT or ASCII file format, can be added to the Endpoint Toolbox and placed anywhere on a chart. Text display can be in any font or size in your System.

Gantt charts may be scaled to hours, days, weeks, months, quarters, or years or be put into a format of your choice. FastTrack Schedule supports international and U.S. date formats, as well as military and standard time. A page-preview feature gives you an overview of your chart on-screen. You can flip from page to page and zoom in for closer viewing. FastTrack Schedule is a clean, crisp program that sets the standard for this category.

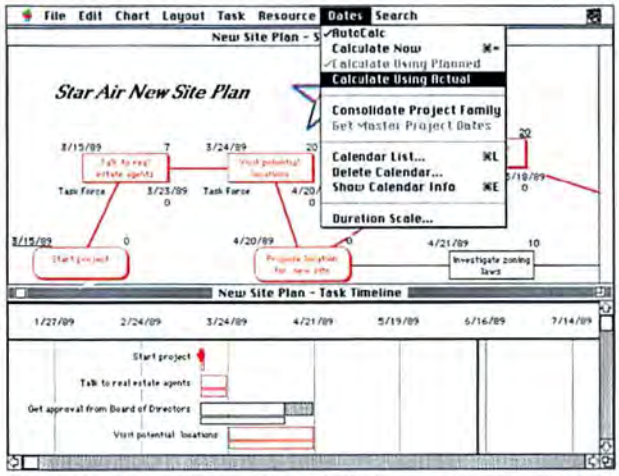
MacSchedule differs from FastTrack Schedule in that it doesn't offer on-screen color or the same shading options, although it conforms well to the Mac interface. Resizing Gantt charts along different time dimensions is easy and helps users see the relationships among tasks from different time perspectives. Unfortunately, MacSchedule doesn't offer a collapse feature for activities or tasks to accompany its time-compaction feature.

MacSchedule divides its Gantt charts into quarterly, monthly, half-monthly, weekly, daily, or free-form segments. The system automatically calculates the number of days that have elapsed and the days to go for each project. To illustrate task starts, stops, and milestones, MacSchedule uses the standard diamond, square, and triangle symbols, which you can replace with your own geometric shapes. All the schedules created in the program follow a simple hierarchical approach—the information is entered and displayed chronologically. All inserts and edits are quick and painless.

The MacSchedule documentation is clear and concise and includes an excellent section on project planning. For average users, learning the pro-



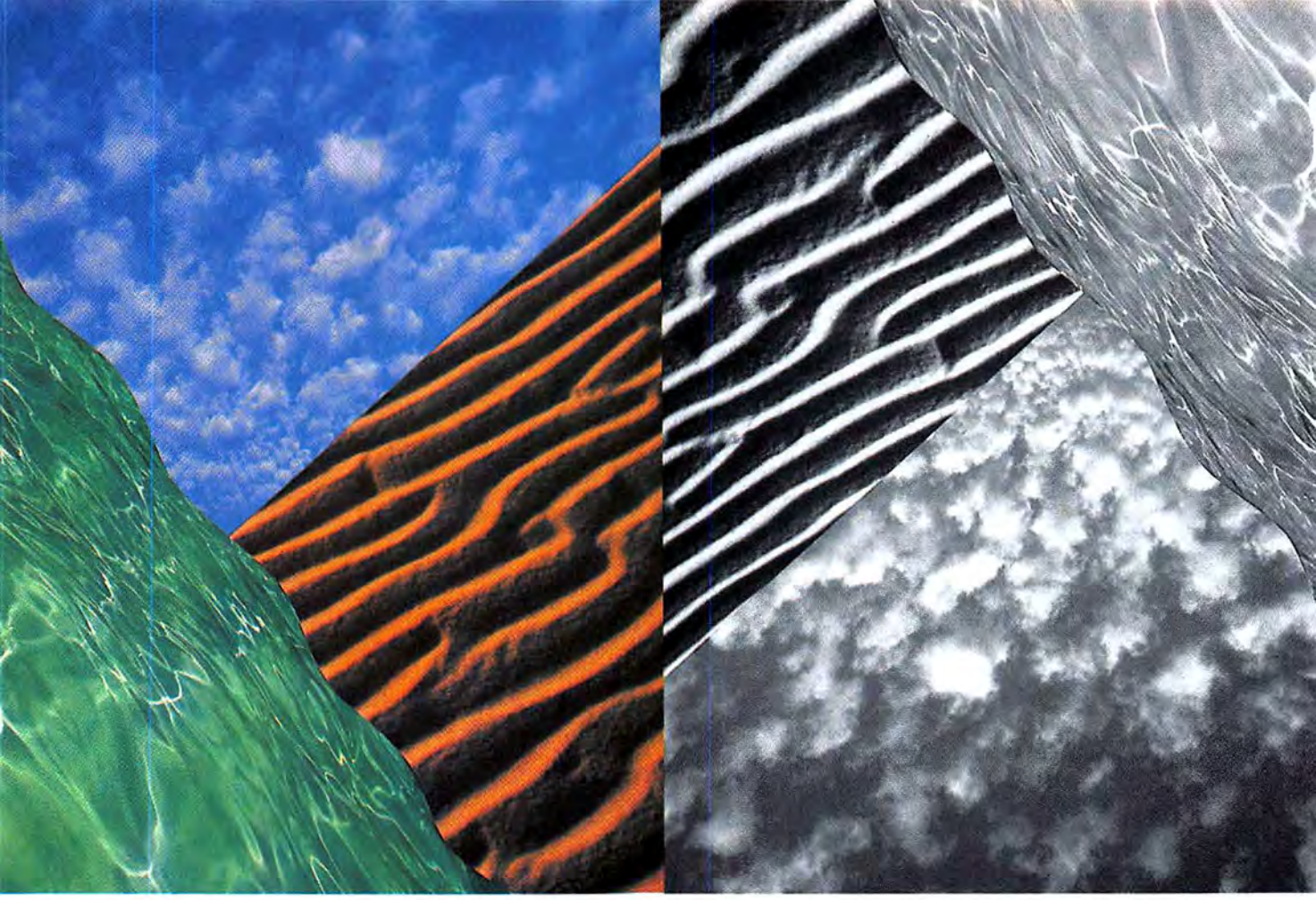
MacSchedule offers a variety of graphic symbols to denote project milestones. This brochure schedule helped plan the project and track its progress.



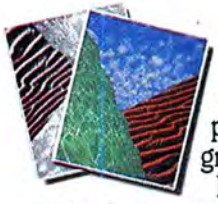
Users of MacProject II can enter actual dates, costs, and income and compare them with planned values. The program calculates dates, slack time, critical paths (shown in red), resource utilizations, and cash flows, using both planned and actual information.

Unadjusted Projects

PERT & Critical Path Techniques is a project-scheduling system that incorporates PERT and CPM scheduling tools, but it doesn't track actual start and completion dates, compare them with the project's schedule, or make necessary adjustments. The program, which is clearly not as flashy as the other packages, is plain and functional—a nuts-and-bolts project scheduler. PERT & Critical Path Techniques provides detailed tabular output from its planning models. The package offers time measurement, project costing, and scheduling. It offers full textbook implementations of PERT and CPM, including calculation of all slack; shadow price; first start, first stop; last start, last stop; and all resource-usage variables. The documentation is chock-full of references, techniques, and interpretations of PERT and CPM output.



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Glossary

Critical Path
A sequence of critical tasks that constitutes the shortest amount of time in which a project can be completed.

Dependency
A relationship between two tasks in a project in which work on one cannot begin until the work on the other has been completed.

Duration
The amount of working time needed to complete a task.

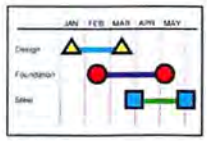
Elapsed Time
The total calendar time, plus nonworking time, between the beginning and the end of work on a task.

Gantt Chart
A time-line chart that shows tasks chronologically from left to right, using bars to show start, stop, and total times.

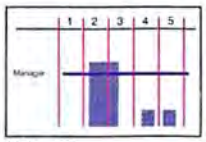
Histogram
A bar chart of the work load assigned to a single resource for the duration of the project.



Critical Path



Gantt



Histogram

Leveling
Adjusting the use of resources in a project so that no resource is overallocated.

Milestone
A goal or significant point in a project, such as the start or finish of a phase or set of tasks.

Network
A graphic representation of a critical path. Each task is a box, and the line connecting the tasks represents the working time necessary to complete them.

PERT Chart
A graphic depiction of the relationship of tasks within a project. The logical and historical predecessor to a critical-path chart, it lays out tasks without regard to priority, slipping, or the overall impact of slipped tasks on a project.

Slack Time
The amount of additional time a task can take to complete without affecting the ending date of the entire project.

gram will probably take only an hour or two. Although MacSchedule is a solid package, in its present form it can't compete with FastTrack Schedule. Enhancements in version 2.0, which is due this fall, include a simple spreadsheet tool for planning, multiple-window support, improved graphics and drawing capability, and an expansion of the titling capability. The new release should put MacSchedule back into a competitive price/performance position.

Project-Tracking Systems

Project-tracking systems are the powerhouses of the project-management market. The three major contenders in this market segment are MacProject II, Micro Planner and Project Exchange, and Information Manager. Two of these systems, MacProject II and Micro Planner, use the simulations of PERT and CPM methods and include integrated data-management and reporting tools for tracking a project's actual versus predicted performance. Information Manager is a highly specialized database program that can be used alone or with the other two packages.

MacProject II has a highly structured approach. The system is oriented along classic task and milestone lines, in which each milestone is composed of multiple tasks. MacProject II adds a new dimension by providing supertasks — overarching projects linked to the project you're working on.

The program's approach is apparent in the entry modules. By providing a rigid structure for data entry, many of the uncertainties and problems that users face with sophisticated programs are removed. Building on the Mac's graphical interface, most data entry uses a library of symbols that a user weaves into a project plan. Even the tabular data-entry sections of the program are stylized to conform to the Mac interface.

MacProject II has broad what-if capabilities as well as the ability to automatically adjust the entire project plan based on actual results. Extensive search facilities to help the project manager zero in on a task, milestone, or supertask are included. MacProject II can track multiple variables and estimates for each task — in fact, it can keep tabs on all the data needed for complete PERT and CPM planning.

From this data, MacProject II calculates slack times (the amount of additional time that a task can take before it increases the length of the whole project); the critical-path resource duration, or the amount of time that a person or machine will work on a particular task; the work load, which is the amount of work allocated to a resource for a given

Affordable Project Management

At press time, a new product called Project Blocks was sent to us by PRIORI Systems. This program, a CPM scheduler with a calendar to keep track of plans and appointments, offers a quick-and-dirty project-management system that deviates somewhat from the standard Mac interface. Version 1.1. Requires 512KE or later. $38. Users who want to get their feet wet with an affordable package can write to PRIORI Systems, P.O. Box 40219, St. Paul, MN 55104; (612) 871-7519.

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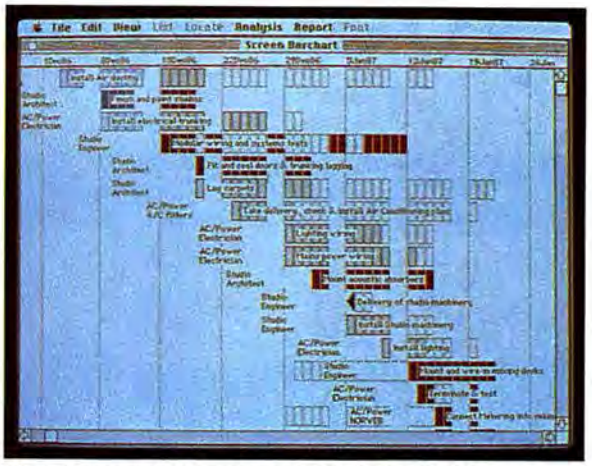
• The Task Cost Entry Table, which shows the fixed costs and income for each task in the project. This chart is also for entering data.

• The Resource Table, which lists in alphabetical order the names of the people and resources assigned to the project, indicates which parts of the project they are attached to, determines their maximum availability for the project, and displays their cost information.

• The Cash Flow Table, which summarizes the project's costs and income chronologically. The table is compiled from the information entered into the Task Cost Entry Table and the Resource Table and from the dates in the project schedule. The time lines used in the Cash Flow Table are determined by the scaling you used in project planning. The Cash Flow Table is an outstanding tool for managing the outflow of funds during a project.

• The Project Table shows the task and milestone names, planned and actual start and finish dates, task durations, resource assignments, slack time, subprojects or supertasks, and costs and income. This report is the heart of MacProject II. Tasks and milestones that are on the critical path are boldfaced in the table and in red if you have a color monitor. Other colors used in MacProject II's charts highlight milestones and supertasks off the critical path, dependencies between two critical tasks, negative values, and work scheduled above a resource's capacity.

• The Resource Histogram shows the level of work planned for a single resource. This is a critical tool for balancing work loads between resources. The chart graphically shows if resources are under- or overallocated. Using MacProject II's built-in allocation function, resources can be leveled and the project plan can be adjusted automatically. The entire project can be leveled automatically or interactively — you can accept or reject every leveling suggestion the program makes.



Micro Planner utilizes a color-coded Gantt chart to let users easily determine which tasks are critical to a project's completion date. For example, red signifies critical activities and blue indicates completed ones.

MacProject II works with laser printers and with Hewlett-Packard and Houston Instruments plotters for color output. The documentation intricately explains the function of the program and how it manages projects.

Micro Planner uses a visually oriented data-entry scheme but relies more than MacProject does on pull-down menus. Once the project

Project Management: Features Chart

	FastTrack Schedule	MacSchedule	Schedule Maker	PERT & Critical Path Techniques	MacProject II	Micro Planner II & Project Exchange	Information Manager
Time Planning			✓				
Gantt	✓	✓		✓	✓	✓	
PERT				✓	✓	✓	
CPM				✓	✓	✓	
Actual vs. Forecast Time					✓	✓	✓
Actual Expense Reporting					✓	✓	✓
Project Data Management							✓

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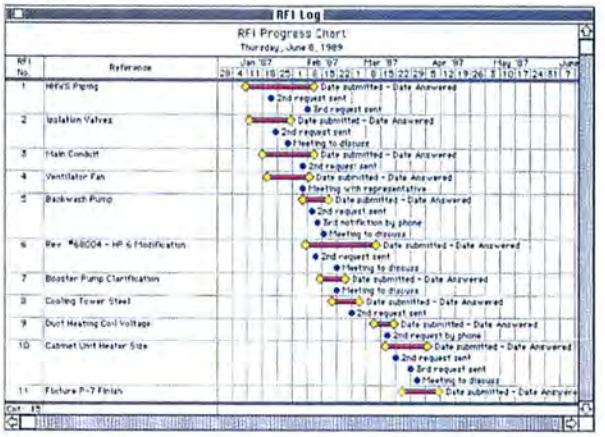
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information has been entered, you identify the critical path by entering timing information into the program. Once you've supplied the starting date and assigned a duration to each activity, Micro Planner automatically calculates the project's critical path and checks your project for "logic errors" such as activities that are unconnected.

Once the CPM analysis is complete, you can view the task dates in a bar chart or network format. Micro Planner makes excellent use of color in the bar chart to show tasks that are on the critical path. (Unfortunately, the program does not provide support for color plotters.)

The resource-analysis capability of Micro Planner takes your projections of when tasks can start and finish and applies real-world constraints to them, such as the resources that are available. As with MacProject II, Micro Planner's main analytic tool is resource leveling, which automatically delays noncritical activities within their slack, or "float time," period. Resources these tasks would otherwise consume are reallocated to critical-path activities.

If your resource leveling can't finish the project in the minimum time (the critical path), then Micro Planner offers two choices: the time-critical option, which identifies what resources are needed to finish the project in the critical-path time; and the resource-critical option, which shows when the project can be expected to finish



AEC Information Manager allows users to create their own tracking systems and automatically update status reports that can include either all or only portions of the database information.

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In addition to its low price, the SupraModem 2400 will save you money by letting you communicate at 2400 baud, thus decreasing your on-line time. The SupraModem 2400 incorporates the advanced Intel 89024MS chip set. This design utilizes fewer parts, assuring operation long after the one-year warranty period.

Easy to Use

The SupraModem 2400 is very easy to use. It features autoanswer and autodial (tone and pulse) for performing phone tasks, and it has a programmable-volume speaker for monitoring call progress. Storing phone numbers and user configurations is also simple because of the modem's programmable nonvolatile memory.

These features and others are explained thoroughly in the comprehensive *SupraModem 2400 Operator's Manual*. Once you understand the basics, the modem's quick-reference card makes finding command descriptions and other modem information quick and simple.

And to make it even easier to begin telecomputing, the SupraModem 2400 comes with introductory packages for several popular on-line services.

Special package available for Macs!
The SupraModem 2400MC combines the standard SupraModem 2400 package with popular telecommunications software and a Peripheral-8 to RS-232 cable for connecting the modem to your Mac. $249.95.

Supra Corporation

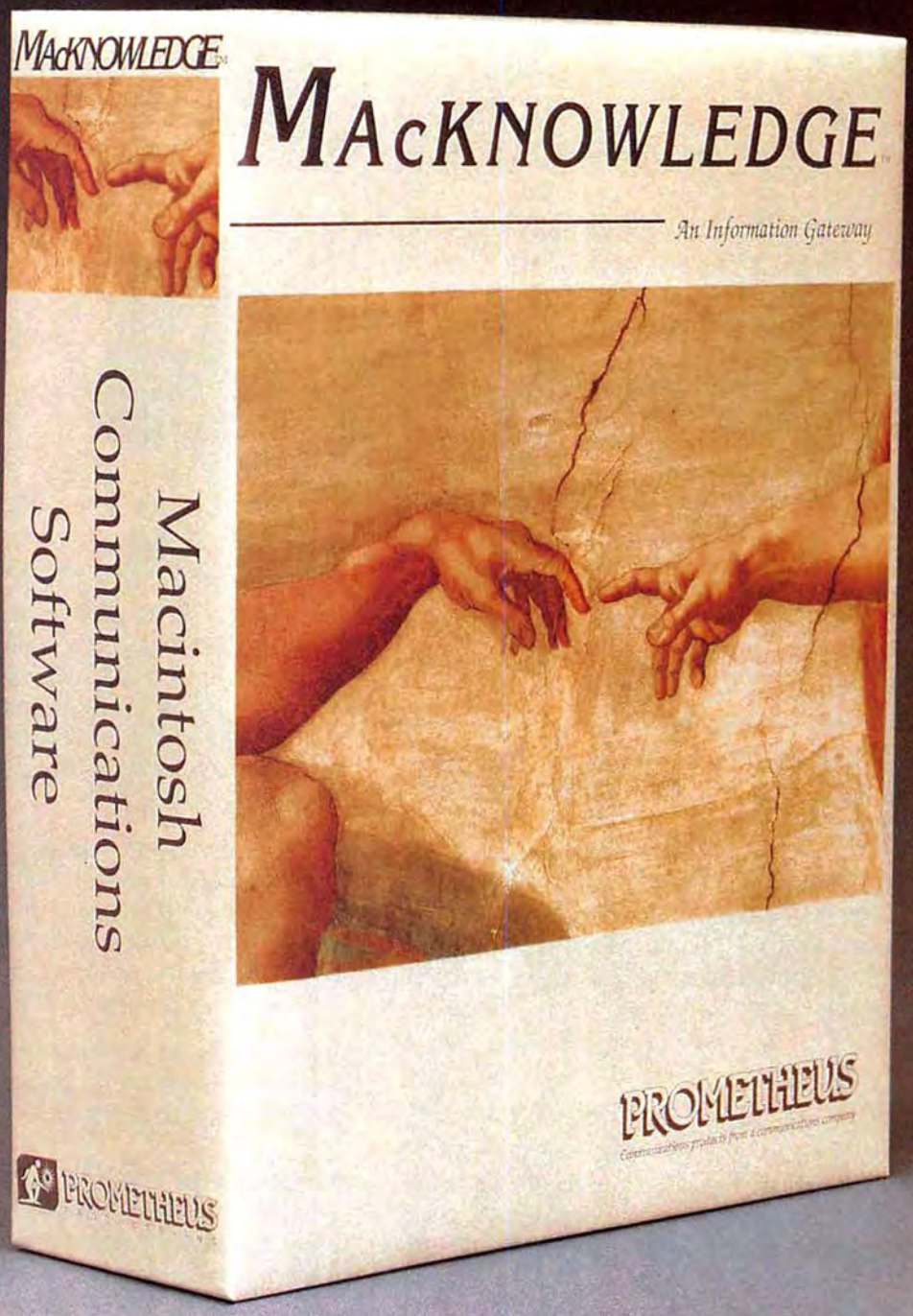
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By the way, if your looking for a modem for your Macintosh, inside or out, 2400 to 9600 BPS, ProModems come ready to use with MAcKNOWLEDGE and, if necessary, the cable included.

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with the given resources.

Time-critical analysis is histogram-driven, while resource analysis is bar-chart–driven. The system provides exception reporting for variances, as well as the mandatory what-if capabilities you expect in a high-level project-management program.

Micro Planner has the most exhaustive documentation of the big-three Macintosh project managers. The package and documentation are slick and set the standard for this market. Users should note that Micro Planning International sells Micro Planner directly and, more often than not, with significant project-management consulting.

A companion package, Micro Planner Project Exchange, provides the ability to transfer data between DOS and Macintosh versions of Micro Planner. It can also prepare data for and receive it in standard file formats from minicomputers and mainframes.

Not surprisingly, the combination of a high-performance package, multiuser capability, sophisticated data-sharing ability, a direct-sales force, and in-house consulting and training have apparently made Micro Planner and Project Exchange the packages of choice for Corporate America. Micro Planner's customer list reads like a Who's Who in the Industrial West.

An upcoming product, Micro Planner X-Pert (priced at $1,995), is the next generation of Micro Planner. The program will modify network layouts graphically, provide time units ranging from 15 minutes to a year, provide a report writer for custom reporting, schedule subprojects, be able to break down work tasks, provide a costing feature, and accommodate precedence or activity-on-arrow scheduling techniques. The new package, a response to corporate customers, should firmly establish Micro Planning International as the preeminent provider of project-management systems to the *Fortune* 500.

Information Manager is a structured-database program that is specialized for project management. The program has no PERT or CPM implementations. Instead, it provides an organizing and managing structure for all aspects of a project, such as correspondence, reminders, and telephone messages.

The database has a graphical interface similar to index cards. Each index card becomes a record within the database. In addition to standard field types, Information Manager uses custom fields for managing projects. Each special field is actually the header on another record. For example, if you define a notepad field as a special field, it automatically opens a 32K file for text storage when selected. Other fields include start date; stop date; scheduled and remaining times for tasks; and the submittal-log field, which tracks project correspondence.

Information Manager lets you set up additional critical dates and reminders on the alarm system. The system notifies you in advance about an impending event and can issue an alarm up to nine times per event. The report generator provides WYSIWYG capability on-screen and full-function formatting.

Information Manager is lightning fast and allows multiple projects to be viewed and managed simultaneously. The program is well designed, but it has a few small flaws. Double-clicking to select a word is not supported nor is multiple scheduling for different people on different sched-

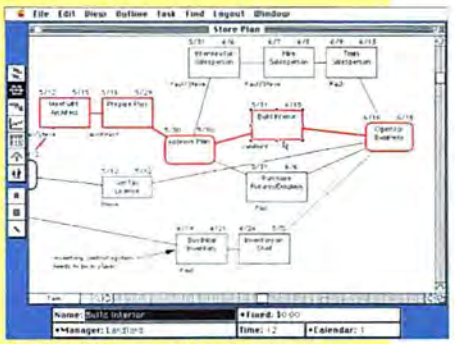
Beta Watch: KeyPlan

Symmetry, the publisher of Acta Advantage, is bringing to market a new outliner and scheduling program called KeyPlan. KeyPlan offers both CPM and Gantt analysis of projects. It can calculate float, or slack, time in its CPM mode and can report actual versus budgeted time. The system can't do any resource leveling for CPM, a major drawback when compared with MacProject II, its major competitor. Nonetheless, KeyPlan should give you about 70 percent of the functionality of Acta Advantage, providing the strongest outlining features of any program available.

KeyPlan takes good advantage of the Mac interface by stacking a series of icons in the left border of the screen. Each icon represents a different view of your data. There's a network view, a bar plan (Gantt), lists or tabular views, overhead costs, and the resource list. KeyPlan uses graphics heavily in all its views. You may become disoriented trying to memorize all of the symbols (there can be six or more in an outline or chart), but once you get used to them, they're very helpful.

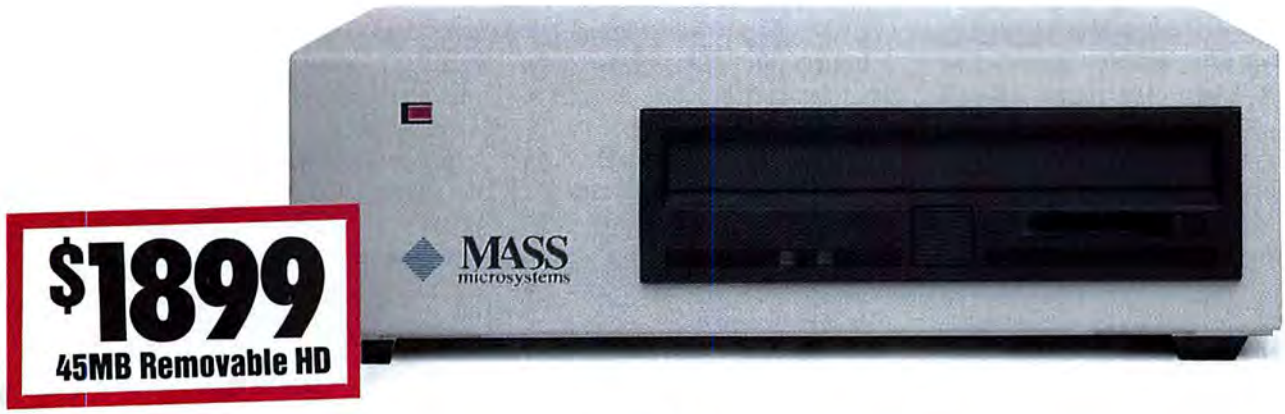
KeyPlan is very intuitive, and it offers an extremely flexible graphics interface for building Gantt and CPM charts. Controlling KeyPlan's time sizing, network dependencies, and organization of a chart is easy.

From a beta bird's-eye view, KeyPlan should land in the middle of the market between FastTrack Schedule and the more-intimidating MacProject II. It's an intuitive program and has the strongest outliner of any project manager to boot. KeyPlan is slated to retail for $450.



KeyPlan lets users plan and manage projects by producing everything from simple outlines to network charts, bar plans, and graphs. The icon palette on the left lets users toggle between different views of the project.

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ules. Information Manager's biggest competitors are HyperCard-based organizers such as Focal Point II from Mediagenic and Hyper-Action from Multi Solutions. For most medium-sized projects, these systems work well. Information Manager doesn't start to show its real data-management power until it works with a big and complex project.

Future Projects

The Mac project-management marketplace is bound to undergo major structural changes in the next few years. Software publishers such as Symmetry (see "Beta Watch: KeyPlan" sidebar) will continue to integrate their foundation products into a project-management framework. The continued emergence of database engines, such as ACIUS' 4th Dimension, will also stimulate the market.

As developers' tool kits become easier to use and as Macs find their place in business, project-management products will become more pervasive, building on the Mac's power and its ability to show complex relationships graphically.

Ken Landis is a general-management consultant who uses project-management systems daily and helps clients use automation to manage their businesses better.

The Bottom Line

The Mac project-management market is currently divided between entry-level outliners and schedulers and high-end project-tracking systems.

FastTrack Schedule has a commanding lead in the first category. It is the right tool for people who manage projects in which they own all the resources — doing consulting, for instance, or implementing business plans or editorial scheduling.

MacProject II kicks in when multiple resources are used and the completion date is critical. And Micro Planner and Project Exchange show their value in large organizations in which users can justify consulting and training services and in which the environment is a mixed bag of Macs and PCs.

Information Manager can complement any medium-to-large-sized project in which a great deal of correspondence, notes, and project information is the norm.

Report Cards

FastTrack Schedule ★★★★½

Flexible Gantt-based project scheduler that uses a hierarchical outline format. Provides the highest degree of functionality and the best on-screen and printed graphic ability in its class. A perfectly suited project-management system for the Mac. Version 1.02. Requires Mac Plus or later. $195. AEC Management Systems, Inc., 20524 Amethyst Lane, Germantown, MD 20874; (301) 428-3694.

Information Manager ★★★★

A dedicated database for managing project information. Designed to be used with MacProject II or Micro Planner. Helps to manage the data needed to make decisions and track status, and a useful alarm feature reminds users of critical dates. Version 1.22. Requires Mac Plus or later. $195. AEC Management Systems, 20524 Amethyst Lane, Germantown, MD 20874; (301) 428-3694.

MacProject II ★★★★

A PERT and CPM project-management system with time and expense reporting. Can be used alone to manage projects and produce management reporting. Offers crisp documentation with an easy-to-follow design. Version 2.0. Requires Mac Plus or later. $499. Claris Corp., 5201 Patrick Henry Drive, Box 58168, Santa Clara, CA 95052-8168; (408) 987-7000.

MacSchedule ★★½

A simple Gantt-based project-management and outliner system. Offers advanced project time scaling but is not for advanced Gantt users. Limited color, graphic, and printing capabilities. Version 1.1.1. Requires Mac Plus or later. $195. Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301; (818) 991-6540.

Micro Planner Plus and Project Exchange ★★★★½

The choice of Corporate America. Provides full PERT and CPM implementations with advanced resource leveling and management reporting. This is the only product that can leverage a company's IBM PC investments. Output can be used easily for management presentations. Version 6.1F for Micro Planner, 1.08 for Project Exchange. Requires Mac Plus or later. Micro Planner, $595; Project Exchange, $100. Micro Planning International, 235 Montgomery St., Suite 840, San Francisco, CA 94104; (415) 788-3324.

PERT & Critical Path Techniques ★★★½

Technically the most sophisticated project-management system, this program has full Gantt and CPM implementation, including all second-order slack and timing calculations, but does not make good use of the Mac interface. If you're a project-manager aficionado, you might want to consider it. Version 6.0. Any Mac. $152. Lionheart Press, P.O. Box 379, Alburg, VT 05440; (514) 933-4918.

Schedule Maker ★★★★

A dedicated employee- or equipment-scheduling system that uses a simple Gantt-chart format but is not a project-management tool. Automates the process of figuring out who should work when and how much it will cost. Version 2.0. Any Mac. $295. Craig Management, Inc., 16717 Monitor Ave., Baton Rouge, LA 70817; (505) 291-6348.



PHOTOGRAPHY MEL LINDSTROM

To get the complete picture on performance, MacUser Labs lined up the monitors and directly compared criteria such as brightness, focus, gray linearity, and geometry. Senior Editor Aileen Abernathy and Paul Yi, the project leader, discussed the finer points of each monitor's display.

MacUser Labs tests 11 gray-scale display systems and finds choosing a winner isn't a black-and-white decision.

Grad

If the world were small and everything in it black or white, the 9-inch monochrome screen of the original Macintosh would be perfect. The problem is, the world is unfathomably large, filled with issues that have no right or wrong, black or white answers. Likewise, there are many computer applications — desktop publishing, photo retouching, medical imaging, 3-D CAD — that require you to see the big picture with subtle shades of gray. Until the Macintosh II came along, however, Mac owners had to settle for small monochrome screens.

The Mac II changed all that forever. Its six NuBus slots enticed peripheral manufacturers to develop a range of video-interface cards and monitors. Now there are monitors with portrait and landscape orientations; small, medium, and large screens; monochrome, color, and gray-scale interfaces. Whatever your needs, a Mac II display system is available.

This month, MacUser Labs evaluates 11 gray-scale display systems — monitors paired with video-interface cards from the same manufacturer — that range from a 12-inch display to a trio of 21-inch models. As we concluded when we reviewed monochrome and color monitors, the buying decision ultimately comes down to personal preferences: How would *you* like to stare at this screen every day? That being the case, why bother reading the rest of this report? Because we'll teach you how to be a discerning shopper,

MacUSER LABS

ing the Grays

tell you all the right questions to ask, and show you how to find a monitor's weak spots. You'll learn to separate the important specs from marketing fluff. In short, you'll be able to make a buying decision based on eyeball evaluations and backed by hard facts and test results.

For this lab report, we dusted off our suite of monitor benchmarks and checked focus, MTF sharpness, gray linearity, geometry, brightness, and nuisance factors such as glare and flicker. All the tests were performed on complete display systems, for two reasons. First, although they are sometimes sold separately, cards and monitors are most commonly bundled together. Second, features are embodied in both components, so we can't accurately review either monitors or cards alone. Where appropriate, we make a distinction between a monitor's attributes and a card's characteristics. All benchmarks were performed on a Mac II, but both the Radius Gray Scale Display and MegaGraphics MegaScreen 2008 can be paired with cards designed specifically for the Mac SE/30. (The Mac 512K, Plus, and SE can't drive gray-scale display systems because their ROMs lack the code for color QuickDraw.)

Why Go Gray?

Monochrome monitors are great for displaying crisp text and line art, but they're unsuitable for tasks such as shading models in CAD applications or retouching photos with products such as ImageStudio or Digital Darkroom (see "I Second That Emulsion," January '89). That's because a monochrome monitor must create the illusion of shades of gray by *dithering* — turning various combinations of pixels on (black) or off (white). If a particular area should be medium gray, its dither pattern might alternate black and white pixels. The resulting images are grainy approximations of their originals. (For a comprehensive look at monochrome monitors, see "Black & White & Read All Over," August '88.)

On a gray-scale monitor, the pixels can be different shades of gray, producing realistic, photographic-quality images (see Figure 2). Although gray-scale display systems cost about $1,000 more than comparable monochrome display systems, in 1-bit mode they can simulate black-and-white monitors whenever needed.

If you absolutely must have a color monitor, by all means buy one. But be prepared to pay dearly for the luxury of 16.8 million colors — a color monitor can cost several thousand dollars more than a gray-scale monitor of the same size. (For a comprehensive look at color monitors, see "True Colors," October '88.) Gray-scale monitors are not always adequate substitutes for color displays, but sometimes they suffice. The video cards are remarkably similar (in some cases they're identical), and most color programs work fine with gray-scale monitors, although the colors are displayed as shades of gray. Text is sharper on gray-scale monitors than on color displays, because even the best color monitors suffer from convergence mismatches among the three electron beams that create the images (see Figure 3).

Greenbacks for Gray Scales

The gray-scale display systems we tested range in price from a little more than $1,000 for Apple's High-Resolution Monochrome Monitor (which, despite its name, can display gray scale) to just under $3,500 for E-Machines' Big Picture Z21 IQ. But when it comes to buying a display system — or any other high-ticket item you're going to use daily — price should be one of your least-important considerations. More significant are basic capabilities and quality issues such as focus and geometry. After all, who cares if you get a great deal on a gray-scale monitor you can't stand?

By Owen W. Linzmayer and the MacUser Labs staff

First decide on the type of display system you need, and then compare the performance and features of models in this category (see "Features of Gray-Scale Display Systems" table). Only after you've winnowed out the obvious losers should you attempt to strike a balance between price and performance.

Size Surprise

The first decision you should make is about the diagonal screen size of the monitor you want. Consider your applications. If you work with big spreadsheets, you'll probably want a large screen with a landscape orientation (the screen is wider than it is tall). But if you do a lot of word processing and occasional DTP work, a portrait display (taller than wide) may be better for you. In general, the bigger the screen, the more information you can display and the more you will pay.

Apple has a stranglehold on the small end of the market with its 12- and 15-inch monitors. The 12-inch landscape monitor lets you view the full width and more than half the length of a letter-sized page, while the 15-inch portrait monitor depicts a full 8.5-x-11-inch page at actual size. But if you're into desktop publishing or CAD and CAM, you probably want to display two letter-sized pages side by side or a single B-sized drawing at true 1:1 scale. For that you need a 19- to 21-inch model, and here the competition gets pretty heated, with nine manufacturers vying for a slice of the pie.

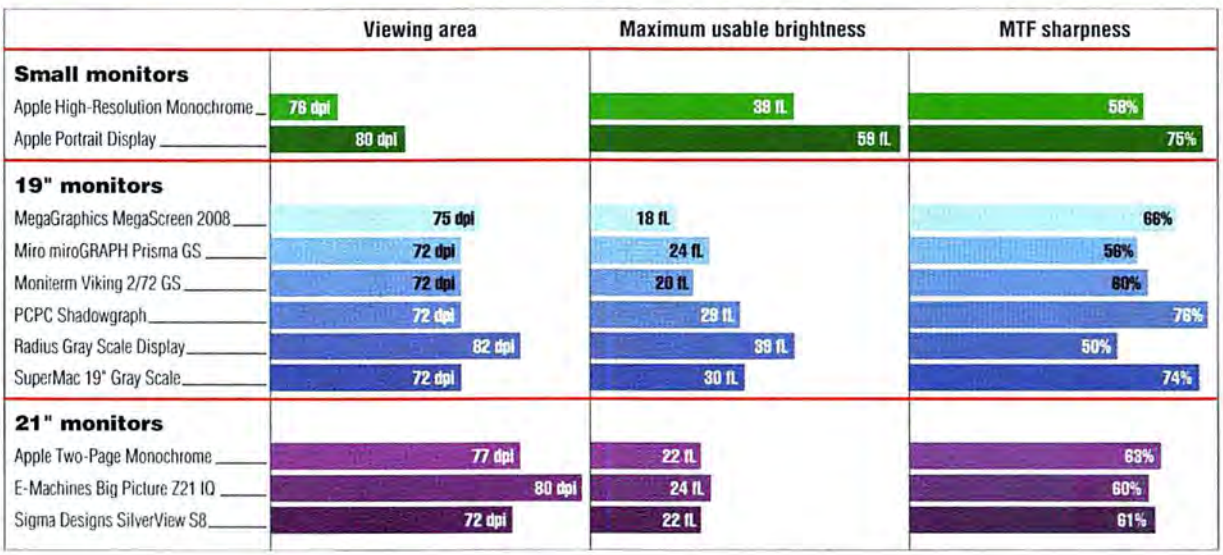
Be forewarned: Screen sizes are like mile-per-gallon ratings for new automobiles — you never get what manufacturers claim. As with television sets, monitor screen size is typically expressed as the diagonal measurement of the cathode-ray tube (CRT) as it comes from the factory. But since part of the screen is hidden by the monitor's frame, the exposed area is smaller. The active area (raster image) is smaller still and varies from one monitor to another. For example, Apple's Two-Page Monochrome Monitor (which also does gray scale) is rated at 21 inches, but the active screen measures only 19.1 inches, almost an inch smaller than the active screens of the "21-inch" monitors marketed by E-Machines and Sigma Designs.

Resolution Confusion

Monitor resolution is an area of great confusion because many people — monitor manufacturers included — incorrectly use two different parameters interchangeably to describe it: pixel dimensions and dots per inch (dpi). Simply put, pixel dimensions are the height and width of the screen as measured in pixels (picture elements), and the dpi figure tells how tightly those pixels (also called dots) are packed together. Throughout this report, we'll refer to resolution only in terms of dpi.

Resolution is an integral part of the Mac's fundamental design philosophy of What You See Is What You Get (WYSIWYG). In other words, when you print a document, it closely approximates what you see on-screen — a screen object that is 1-inch tall is printed at exactly the same size. This WYSIWYG concept is the reason why the Mac has become the computer of choice for desktop publishers. Unfortunately, QuickDraw — the drawing routines built into ROM —

Figure 1: Monitor Performance



The monitors' performance results in each test were scaled against those of the highest-rated monitor. Thus, the longer the bar, the better. Where appropriate, actual test data has been placed at the end of the bars. For the three subjective tests, our judges awarded scores of 1 to 5.
Viewing area: The product of a screen's horizontal and vertical pixel dimensions shows how much information a monitor can display. Also shown is the screen resolution in dpi.
Maximum usable brightness: The brightest screen image obtained while maintaining a sharp, focused picture. The footlambert (fL) ratings were measured with a luminance meter.
MTF sharpness: This is the amount of contrast between single-pixel, black and white lines. We averaged the horizontal and vertical MTF ratings taken at the center and corner of each display. The actual MTF ratings are also shown.

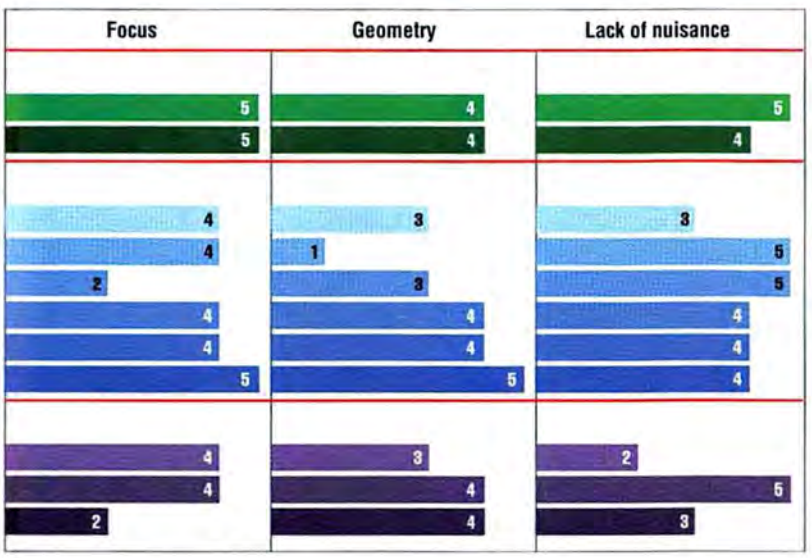
always assumes that the monitor has 72-dpi resolution, the same as that of the standard 9-inch Mac screen, so only monitors with this resolution maintain a one-to-one relationship between the screen and the printer. Documents displayed on screens with resolutions greater than 72 dpi appear shrunken and may be difficult to read, but they print out exactly the same as those displayed on a 72-dpi screen.

Pixel dimensions actually tell you the total number of pixels you can see on-screen at one time. A monitor's vertical dimension is given in lines and its horizontal dimension, in pixels per line. The screens built into early Mac models have 342 lines of 512 pixels per line (normally written as 512 x 342). Given two monitors of the same resolution, the one with the larger pixel dimensions can display more information — a few extra rows and columns in a spreadsheet or a few more lines in a text document.

So what's the bottom line? If you're heavily into number crunching and your sole concern is getting as much data on-screen as possible, forget resolution and go with the monitor that has the greatest pixel dimensions. On the other hand, if true WYSIWYG is important to you, insist on 72 dpi before considering pixel dimensions. The E-Machines monitor offers the best of both worlds. It has the largest overall viewing area, at 80 dpi, but it can be instantly toggled down to three other pixel dimensions and resolutions.

Gray Levels

The number of gray levels a display system offers depends on the memory in the video card. A 1-bit (or monochrome) card provides two levels (black and white), a 4-bit card gives you 16 grays, and an 8-bit card can display "full" gray scale with 256 levels. Some manufacturers sell monochrome cards that you can upgrade to gray scale or 4-bit cards that can be increased to 8 bits by adding memory chips. This route makes sense if you want to grow into a system. Also keep in mind that some gray-scale cards can drive color monitors. If you anticipate that you'll eventually want a color system, get a color-capable card. When you're ready to make the move to color, all you'll need



Focus: Sharpness of text, graphics, and line drawings as seen by our judging panel.
Geometry: Our judges examined the most-important geometric factors — bowing, pincushioning, tilting, and distorting of circles and squares — and awarded an overall geometry score.
Lack of screen nuisances: We examined the most-important nuisance factors — glare, flicker, and jitter — and awarded an overall nuisance score.

Figure 2: Shades of Gray



A 1-bit (monochrome) monitor can either display high-contrast images (top right) or create the illusion of shades of gray by dithering black and white pixels, resulting in grainy pictures (top left). On a gray-scale monitor, the pixels can actually be many different shades of gray. As shown above, the more bits that describe each pixel, the more shades of gray you get and the more realistic the resulting screen image will be.



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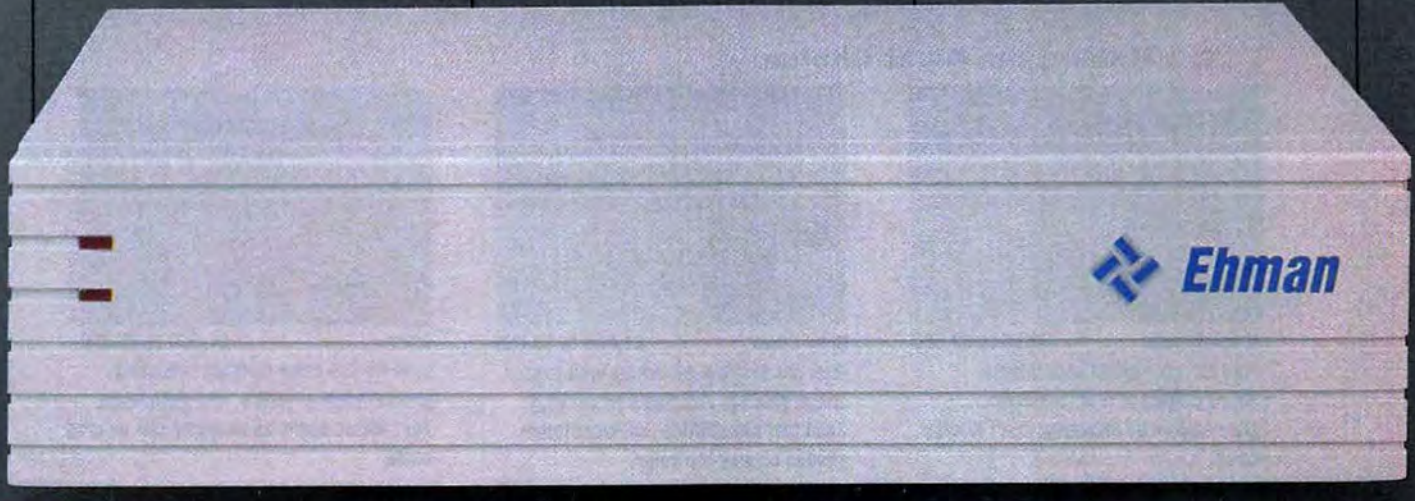
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30+	*$379*	*$449*
45	*$449*	*$529*
60+	*$499**	*$579*
80+	*$599**	*$679*
45MB Removable Drive		*$849*

PC Tools not included with 20MB drives.

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Features of Gray-Scale Display Systems

	Small Monitors		19-Inch Monitors			
	Apple High-Resolution Monochrome	Apple Portrait Display	MegaGraphics MegaScreen 2008	Miro miroGRAPH Prisma GS	Moniterm Viking 2/72 GS	PCPC Shadowgraph
Retail price						
Complete Mac II system	$1,047	$1,797	$2,948	$3,490	$3,090	$2,895
Monitor	$399	$1,049	$1,399	$1,595	$1,295	$1,400
Mac II card	$648	$748*	$1,599	$1,895	$1,795	$1,795
SE/30 card	NA	NA	$1,849	NA	NA	NA
Tube manufacturer	Sony	Hitachi	Clinton	Philips	Philips	Ikegami
CRT size (diagonal, inches)	12 in.	15 in.	19 in.	19 in.	19 in.	19 in..
Active screen (diagonal, inches)	10.6 in.	13.6 in.	17.6 in.	18 in.	17.7 in.	17.9 in.
Pixel dimensions (W x H)	640 x 480	640 x 870	1,024 x 826	1,024 x 768	1,024 x 768	1,024 x 768 640 x 480[1]
Resolution (dots per inch)	76 dpi	80 dpi	75 dpi	72 dpi	72 dpi	72 or 76 dpi [2]
Gray levels	2, 4, 16, 256	2, 4, 16*	2, 4, 16, 256	2, 256	2, 4, 16, 256	2, 256[3]
Color-capable card	yes	yes	yes	yes	yes	yes
Software	no	no	no	yes	no	yes
Vertical scan rate (hertz)	66.7 Hz	75 Hz	69 Hz	72.41 Hz	60 Hz	60 Hz
Horizontal scan rate (kilohertz)	35 kHz	68.85 kHz	59.5 kHz	61.4 kHz	50 kHz	48.76 or 35 kHz[1]
Bandwidth (megahertz)	22 MHz	57.28 MHz	100 MHz	84 MHz	80 MHz	100 MHz
Glare treatment	etched	silica coating	none	etched	optional OCLI ($155)	etched
Tilt/swivel stand	optional ($89)	optional ($89)	yes	yes	yes	yes
Power indicator	yes	yes	no	yes	yes	yes
Brightness/contrast controls	side	side	side	front	front	side
Dimensions (W x H x D, inches)	12.25 x 10.5 x 14.5	12 x 15 x 15	18 x 15 x 15	19.5 x 19 x 17	18.5 x 17.5 x 15.5	19 x 19.5 x 15
Weight (pounds)	20 lb	33 lb	43 lb	55 lb	47 lb	55 lb
Warranty	90 days	90 days	1 year	1 year	1 year	1 year

*Monochrome card with 4-bit expansion. [1]When used with Apple High-Resolution Monochrome Monitor. [3]Gray-scale card that can handle 4 and 16 gray levels is now shipping.

is a new monitor.

Apple is the odd man out in the gray-scale game. All the other manufacturers offer 8-bit cards with 256 shades of gray, but Apple adheres to its own standard of a 4-bit card, which limits the Portrait Display and Two-Page Monochrome monitors to 16 levels of gray. According to Apple, the decision to stick with a 4-bit card was based on two factors. First, since it uses less memory, it's less expensive. Second, it provides integration across the company's product line — Apple's flat-bed scanner also uses 4 bits, and the LaserWriter is capable of simulating only 16 to 20 smooth shades of gray. Unfortunately for Apple, comparing an image rendered in 16 grays with one done in 256 grays reveals the inadequacies of 4-bit gray scale (see Figure 2). Besides, Apple offers an 8-bit card for its 12-inch moni-

Figure 3: Making the Right Choice



Monochrome $500 to $2,500
Best for text-based applications. Sharp display of text; simulates gray shades by dithering; can't display color.



Gray Scale $1,000 to $3,500
Best for desktop publishing with photos, image shading, and photo retouching. Good text capabilities, but substitutes shades of gray for color.



PHOTOGRAPH: PETER ALAN GOULD

Color $1,000 to $6,000
Best for full-color desktop publishing, presentation graphics, and multimedia. Text not as sharp as monochrome or gray scale.

Radius Gray Scale Display	SuperMac 19" Gray Scale	21-Inch Monitors: Apple Two-Page Monochrome	E-Machines Big Picture Z21 IQ	Sigma Designs SilverView S8
$3,390	$3,294	$2,897	$3,495	$2,999
$1,495	$1,399	$2,149	$1,695	$1,400
$1,895	$1,895	$748*	$1,995	$1,599
NA	$1,895	NA	NA	NA
Clinton	Ikegami	Philips	Toshiba	Toshiba
19 in.	19 in.	21 in.	21 in.	21 in.
18 in.	17.5 in.	19.1 in.	20 in.	20 in.
1,152 x 882	1,024 x 768	1,152 x 870	1,280 x 960; 1,152 x 864; 640 x 480; 576 x 432	1,152 x 870
82 dpi	72 dpi	77 dpi	80, 72, 40, 36 dpi	72 dpi
2, 16, 256	2, 4, 16, 256	2, 4, 16*	2, 4, 16, 256	2, 4, 16, 256
yes	yes	yes	no	no
yes	yes	no	yes	no
72 Hz	60 Hz	75 Hz	70 Hz at 80/40 dpi 76 Hz at 72/36 dpi	73 Hz
66 kHz	48.78 kHz	68.7 kHz	68.4 kHz	70 kHz
100 MHz	100 MHz	100 MHz	100 –110 MHz	100 MHz
none	etched	etched	etched	none
yes	optional ($199)	yes	yes	yes
no	yes	yes	no	yes
front	side	side	side	front
18 x 18.5 x 15	19 x 16.75 x 15	19.75 x 19.5 x 16	19.5 x 18.5 x 15.5	19 x 17.5 x 17.5
57 lb	52 lb	55 lb	62 lb	59 lb
1 year	1 year	90 days	1 year	1 year

tor. Why not for its other monitors as well?

To display and retouch photographic-quality images, you need 256 shades of gray. However, for some applications, such as word processing, it's desirable to use fewer. The fewer grays you use, the less memory is required and the faster the screen can be redrawn. You select the maximum number of grays through the Control Panel with the Monitors cdev (provided on Apple's System disk).

Software Surprises

You don't need any special software to use a gray-scale display system, but some manufacturers provide utilities that make life with a large-screen monitor easier and more productive.

The Radius Gray Scale Display cdev contains a nice collection of utilities, including tear-off menus and a screen saver. You can also take cropped screen dumps in PICT2 format, enlarge the menu bar to 16 points for easy reading, and arrange for dialog boxes and windows to appear automatically centered behind the cursor. SuperMac and E-Machines have similar collections of utilities for exclusive use with their screens. The miroGRAPH Prisma GS comes with a disk full of similar public-domain and shareware programs that can be used with any monitor. Most of these are also available through on-line services or from user groups' program libraries.

The PCPC Shadowgraph includes a copy of Stepping Out II from Berkeley System Design (see Quick Clicks, October '88). This utility tricks programs into thinking the monitor has a screen size greater than its actual 1,024 x 768 pixels. Only a portion of this RAM-based virtual screen is visible at one time. But when you move the cursor to the edge of the screen, the display shifts to reveal what was hidden. Stepping Out II requires a lot of system memory, and scrolling is jerky.

Far better are the hardware-based virtual screens available with the SuperMac and E-Machines display systems. With these, the more video-card memory you devote to screen size, the less is available for defining levels of gray. But since the entire virtual screen resides in the video memory (as opposed to system memory), the screen slides fluidly in all directions. This is a slick feature that must be seen to be appreciated.

Showroom Showdown

Once you've made up your mind about screen size, resolution, pixel dimensions, and levels of gray, it's time to visit the computer store. To judge subjective monitor characteristics — focus, gray linearity, geometry, brightness, glare, and nuisance factors — you should personally eyeball monitors that interest you and make side-by-side comparisons. Since few dealers carry an extensive selection, this isn't always possible, so MacUser Labs has done it for you. We borrowed 11 gray-scale display systems from their manufacturers, built our own showroom, and put the monitors through their paces for a three-person panel of judges (see Figure 1). Keep in mind that what bothers one person may be perfectly acceptable to another.

Installation is extremely straightforward. If you've ever inserted a game cartridge into a Nintendo controller, you've got all the technical skills required. Simply pop the lid off your Mac II, plug the video card into any NuBus slot, run the supplied cable from the card to the monitor, replace the lid, and turn on the computer — that's it. Application software automatically recognizes the gray-scale monitor.

A Sharper Image

A monitor's sharpness, or focus, can make the difference between a finely striped design and a featureless blob. Basically, focus reflects how well you can see fine features. If pixels blur together, small details such as thin lines can be fuzzy, and small font sizes may be unreadable. In general, focus will not be uniform in all areas of a large CRT screen

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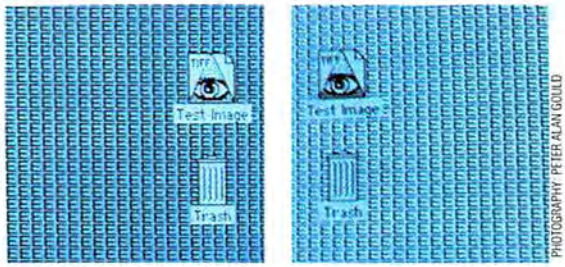
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Figure 4: In Focus



PHOTOGRAPHY: PETER ALAN GOULD

A monitor's focus determines how well you can see fine details such as thin lines and small text. The Apple Portrait Display (left) was exceptionally sharp, even at the edges, whereas the Moniterm Viking 2/72 GS (right) was blurry.

at the same time, and it's rarely as good at the edges as it is in the center. (Some manufacturers shrink the active screen to avoid the troublesome edges.) Both brightness and contrast can affect the image's overall focus.

To our judges' eyes, all the monitors had acceptable focus, but there were some standouts. The Apple Portrait Display and the SuperMac 19" monitors had exceptionally sharp focus even at the edges, whereas the Moniterm and Sigma models were below average (see Figure 4).

For a more-objective test of screen sharpness, we measured the horizontal and vertical modulation-transfer function (MTF) of each monitor, using a custom-built, 300-dpi charge-coupled device (CCD) array. In English, this simply means we used a special gadget to compare the contrast of thin black and white lines with that of large areas of black and white. A monitor with a perfect MTF score (100 percent) would display stripes with the same sharpness as larger areas. You may notice that the MTF results don't always correlate with our subjective focus ratings. That's because the human eye sees focus as a combination of MTF sharpness *and* brightness.

Great Grays

Grays are actually dim whites — that is, whites of lesser intensity, or brightness. When the electron beam fires at full (100 percent) intensity, the phosphor glows white. When the beam fires at lower intensities, grays are produced.

To evaluate gray linearity, we used a Minolta LS-110 Luminance Meter to see

On the Horizon

By the time you read this, RasterOps (Santa Clara, California) should be shipping its ColorBoard 264, a low-cost Mac II video-interface card that can drive the Apple High-Resolution Monochrome Monitor or AppleColor High-Resolution RGB Monitor in 1-, 2-, 4-, 8-, and 24-bit gray-scale and color modes, respectively.

This board can also output 8-bit gray scale (not color) directly to any standard National Television Standards Committee (NTSC) device, including a VCR or television. The big news is its unbelievably low price: $995 for the Mac II NuBus card, and $1,295 for an SE/30 version. Typically, color boards have cost several times this much.

A longtime IBM-oriented firm, Image Systems (Hopkins, Minnesota), recently entered the Mac market with a unique, 24-inch, gray-scale monitor, the M24L. Using a technique called Hi-Res Multi-Sweep, the $1,995 M24L automatically adjusts its horizontal scanning frequency and screen-refresh rate, allowing it to work with many third-party video-display boards (we saw it running with E-Machines' Mac II card). Ultimately, the resolution of this monitor is determined by the board that provides the video signals, but Image Systems claims the M24L can display from 1,280 x 960 to 2,100 x 1,575 pixels with a refresh rate of 60 to 80 Hz.

In late July, Sigma Designs began shipping its Gray Scale Display Adapter, an alternative to Apple's card for the Two-Page Monochrome Monitor. The Display Adapter matches Apple's specifications in every way and then goes one step further: It provides 2, 4, 16, *or 256* levels of gray, whereas Apple allows only a maximum of 16. Sigma Designs' board, which is also compatible with the A/UX operating system, carries a retail price of $1,895 and doesn't ship with any software or cables, only a manual.

how well the monitors could display proportional levels of brightness. Ideally, a block of 50-percent gray should register half as bright as white. A monitor with poor gray linearity, such as the Radius Gray Scale Display, does not represent different shades of gray accurately and may push dark grays into the realm of black. The PCPC Shadowgraph, on the other hand, came the closest to gray-linearity perfection (see Figure 6).

Version 4.0 of Apple's Monitors cdev, which was released with 32-bit QuickDraw, contains an option to select different *gamma tables*. A gamma table lets you tweak colors and gray levels for optimum trueness on different monitors. That's the good news. The bad news is that video-board makers must specifically support this feature, and, to the best of our knowledge, nobody has implemented it yet.

Distorting Reality

Many monitors have geometry problems, especially at the display's outer edges. Some have a slight inward or outward curve at the edge of the screen or a screen image that tilts to one side (see Figure 7). Others, particularly the larger models, display circles as ovals and squares as rectangles. Obviously, this is unacceptable when you're working with graphics. Even text can be distorted, which contributes to eyestrain.

We checked geometric linearity with a modified version of Larry Pina's share-

Capsule Reviews

12" 15" 19"

Apple High-Resolution Monochrome . . ¥¥¥¥

The smallest gray-scale display we evaluated (12 inches), this is a good entry-level monitor that runs in black-and-white mode with Apple's $199 Monochrome Video Card. Use the $648 Mac II 8-bit Video Card instead, and you get a maximum of 256 gray levels plus the option of driving the AppleColor High-Resolution RGB Monitor when you outgrow gray scale. Or buy the RasterOps ColorBoard 264 for 32-bit Color QuickDraw capabilities.

Pros: Apple's only full gray-scale card; low-cost entry-level system; excellent focus and brightness; good geometry; color-capable card. **Cons:** Small screen; not WYSIWYG; slightly below average gray linearity and MTF sharpness; only 90-day warranty.

Apple Computer, Inc.
20525 Mariani Ave.
Cupertino, CA 95014
(408) 996-1010
$1,047

Apple Portrait Display ¥¥¥¥

If it weren't limited to 16 grays, we'd highly recommend this monitor. It has a



PHOTOGRAPHY: MEL LINDSTROM

Small monitors: Apple's Portrait Display and High-Resolution Monochrome.

640-x-870-pixel screen designed specifically for full-page layout, and it's the only portrait screen capable of displaying gray scale. It requires Apple's Mac II Portrait Display Video Card, which comes with 2 bits (4 gray levels) and can be upgraded to 4 bits.

Pros: Displays one page at full size; brightest screen; excellent focus and MTF sharpness; good geometry; color-capable card; ADB ports allow flexible setup configurations. **Cons:** Maximum of 16 gray levels; not WYSIWYG; worst gray linearity; 90-day warranty.

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Capsule Reviews

19"

MegaGraphics MegaScreen 2008 ↕↕↕

This monitor of average performance has a small metal case with exposed screws, lending it a slightly industrial look. When Apple's System 7.0 ships, MegaGraphics will send registered owners a cdev called MegaMonitors, which will let you adjust the timing parameters of the 2008 video card so it can drive other gray-scale or color monitors.

Although not reviewed, the MegaScreen 3008 card for the SE/30 has the same specifications as the 2008, except that it runs in 1- or 8-bit modes only.

Pros: Excellent gray linearity; good MTF sharpness; color-capable card; tilt/swivel stand; SE/30 card available. **Cons:** Not WYSIWYG; worst brightness; slight geometry problems; no glare protection or power indicator.

MegaGraphics, Inc.
439 Calle San Pablo
Camarillo, CA 93010
(800) 423-0183 or (805) 484-3799
$2,948

Miro miroGRAPH Prisma GS ↕↕

This system performed poorly on several of our tests. It comes with an 8-bit color card, but you can choose only 2 or 256 gray levels; there are no intermediate settings. A disk of public-domain and shareware utilities for large-screen users is included.

Pros: WYSIWYG display; good gray linearity; public-domain and shareware utilities; color-capable card; tilt/swivel stand. **Cons:** Only 2 or 256 gray levels; worst geometry by far; poor MTF sharpness and contrast.

Miro Data Systems
6 Faraday St.
Irvine, CA 92718
(714) 380-1120
$3,490

Moniterm Viking 2/72 GS ↕↕

This monitor performed poorly on many of our tests, but at $1,295 it is a no-frills model, the least expensive of the 19-inch models reviewed. However, its 8-bit video card costs as much as the others do. The video card is color-capable and generates the full range of 2, 4, 16, and 256 gray levels. Though the vertical scan rate is only 60 hertz, there's no discernible flicker. The unit we tested came with the optional OCLI coating, which completely eliminated glare.

Pros: WYSIWYG display; tilt/swivel stand; color-capable card; optional OCLI coating. **Cons:** Poor focus, MTF sharpness, brightness, and gray linearity; slight geometry problems.

Moniterm Corp.
5740 Green Circle Drive
Minnetonka, MN 55343
(812) 935-4151
$3,090



PHOTOGRAPHY: MEL LINDSTROM

19-inch monitors: Moniterm Viking 2/72 GS, Miro miroGRAPH Prisma GS, and MegaGraphics MegaScreen 2008.



PHOTOGRAPHY: MEL LINDSTROM

19-inch monitors: PCPC Shadowgraph, SuperMac 19" Gray Scale, and Radius Gray Scale Display.

PCPC Shadowgraph . . ½½½½½

The cheapest large-screen gray-scale display system we reviewed, it gets our nod as the price/performance champ. It uses the same 19-inch Ikegami tube that's inside the SuperMac, so it's no surprise that the two systems share specs. It comes bundled with Stepping Out II, which creates large virtual screens. The $1,795 Color Graphics Card can drive Apple's High-Resolution Monochrome Monitor, but as it costs almost three times as much as Apple's card, this feature isn't too worthwhile.

Pros: Least-expensive 19-inch display system; WYSIWYG display; best gray linearity and MTF sharpness; good focus and geometry; color-capable card can also drive Apple's 640-x-480-pixel monitors; tilt/swivel stand; Stepping Out II included. **Cons:** Only 2 or 256 gray levels; skimpy documentation; slight flicker.

Personal Computer Peripherals Corp.
4710 Eisenhower Blvd., Bldg. A
Tampa, FL 33634
(800) 622-2888 or (813) 884-3092
$2,895

Radius Gray Scale Display. ½½½

With the largest active screen area of any 19-inch monitor we tested, this monitor manages to squeeze in 1,152 x 882 pixels at 82 dpi, which means it can display more data than some 21-inch monitors can. The accompanying cdev has several utilities, such as tear-off menus, that make working with the large viewing area easier.

Pros: Large pixel dimensions; brightest of the large-screen monitors; good focus and geometry; extensive utilities; color-capable card; tilt/swivel stand; SE/30 card available. **Cons:** Expensive; not WYSIWYG; no 2-bit (four gray levels) mode; worst MTF sharpness and gray linearity; no glare protection or power indicator.

Radius, Inc.
1710 Fortune Drive
San Jose, CA 95131
(800) 227-2795 or (408) 434-1010
$3,390

SuperMac 19" Gray Scale. . . .½½½½

This monitor uses the same Ikegami tube as the PCPC Shadowgraph, displaying 1,024 x 768 pixels at a resolution of 72 dpi. Its Spectrum/8 Series II card can also drive Apple's 13-inch color monitor and SuperMac's line of 16- and 19-inch color and gray-scale monitors. Add the optional $5 modular oscillator, and it can drive multisync, NTSC RGB, and PAL RGB monitors. A special 8-pin, mini-DIN "feature connector" on the video card accepts external sync and pixel-clock signals, which are useful for genlocking. The SuperVideo cdev adds virtual screens up to 4,096 x 1,536 pixels in monochrome and includes large-screen utilities.

Pros: Hardware-based virtual screens; hardware pan and zoom; extensive utilities; WYSIWYG display; best geometry and focus; excellent gray linearity and MTF sharpness; good brightness; color-capable card; extensive utilities. **Cons:** Expensive compared with the Shadowgraph; slight flicker.

SuperMac Technology
485 Potrero Ave.
Sunnyvale, CA 94086
(408) 245-2202
$3,294

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ware program Test Pattern Generator. The test image consisted of a large circle in the center of the screen and smaller circles in the corners. Good monitors have square screen images and five perfectly round circles. Poor monitors display severe pincushioning (inward bowing of the image), shrinking at the corners of the screen, or egg-shaped circles. The SuperMac and PCPC monitors had the best geometry, and the Miro fared the worst (see Figure 5).

Night and Day

Brightness determines how intensely an image is projected from the screen, whereas *contrast* is the relative difference between dark and light areas. Displays with poor contrast look muddy or washed out, and similar shades of gray may blend together. Contrast is also important for readability; poor contrast between text and background can cause eyestrain.

A bright screen image helps combat glare, so make sure your monitor has an adequate brightness range. Keep in mind that brighter images may not be as sharp. Increasing the intensity of the electron beam makes it wider, and it can bleed into adjacent pixels. The Radius Gray Scale Display was the brightest big-screen monitor, but it suffered from the worst

Capsule Reviews

Apple Two-Page Monochrome . . . ½

This display system is a prime example of a product that just keeps coming up short. Its active screen size is small, the warranty period is a miserly 90 days, and it's limited to 16 gray levels by a 4-bit interface card. The monitor itself is fine, with aesthetically pleasing lines, but the system can't be recommended in light of its competition.

Pros: Good focus; average MTF sharpness and gray linearity; tilt/swivel stand. **Cons:** Maximum of 16 gray levels; not WYSIWYG; poor brightness; slight geometry problems; small active screen size; annoying jitter; 90-day warranty.

Apple Computer, Inc.
20525 Mariani Ave.
Cupertino, CA 95014
(408) 996-1010
$2,897

E-Machines Big Picture Z21 IQ ½

E-Machines offers two Big Picture display systems for the Mac II, both built around the same 21-inch landscape monitor; the video cards determine the capabilities. The bare-bones Z21 video board is 1-bit monochrome, but if you add a memory module, the same monitor can display 8-bit gray-scale and larger virtual screens (up to 2,560 x 4,096 pixels in monochrome). A cdev lets you choose the default resolution of the screen, which you can change on the fly with the touch of a key. So if you are giving a presentation, set the screen to 36 dpi for jumbo-sized text and icons (a great feature for the visually impaired).



PHOTOGRAPHY: MEL LINDSTROM

21-inch monitors: E-Machines Big Picture Z21 IQ, Apple Two-Page Monochrome, and Sigma Designs SilverView S8.

This is the most flexible of all the monitors reviewed and also the most expensive, but we think its unique features justify the higher price. One caveat: E-Machines took advantage of capabilities of 32-bit QuickDraw before Apple released it by patching the system with an INIT. Some popular programs, such as Illustrator, HyperCard, and AppleShare, have problems with E-Machines' software (see photo above). E-Machines provides patches and promises to remedy these problems.

Pros: Largest pixel dimensions; hardware-based virtual screens; hardware pan and zoom; switchable resolutions; WYSIWYG display; extensive utilities; excellent brightness; good geometry and focus; tilt/swivel stand. **Cons:** Most-expensive system; poor gray linearity and MTF sharpness; patches required for some programs; video card not color capable; no power indicator.

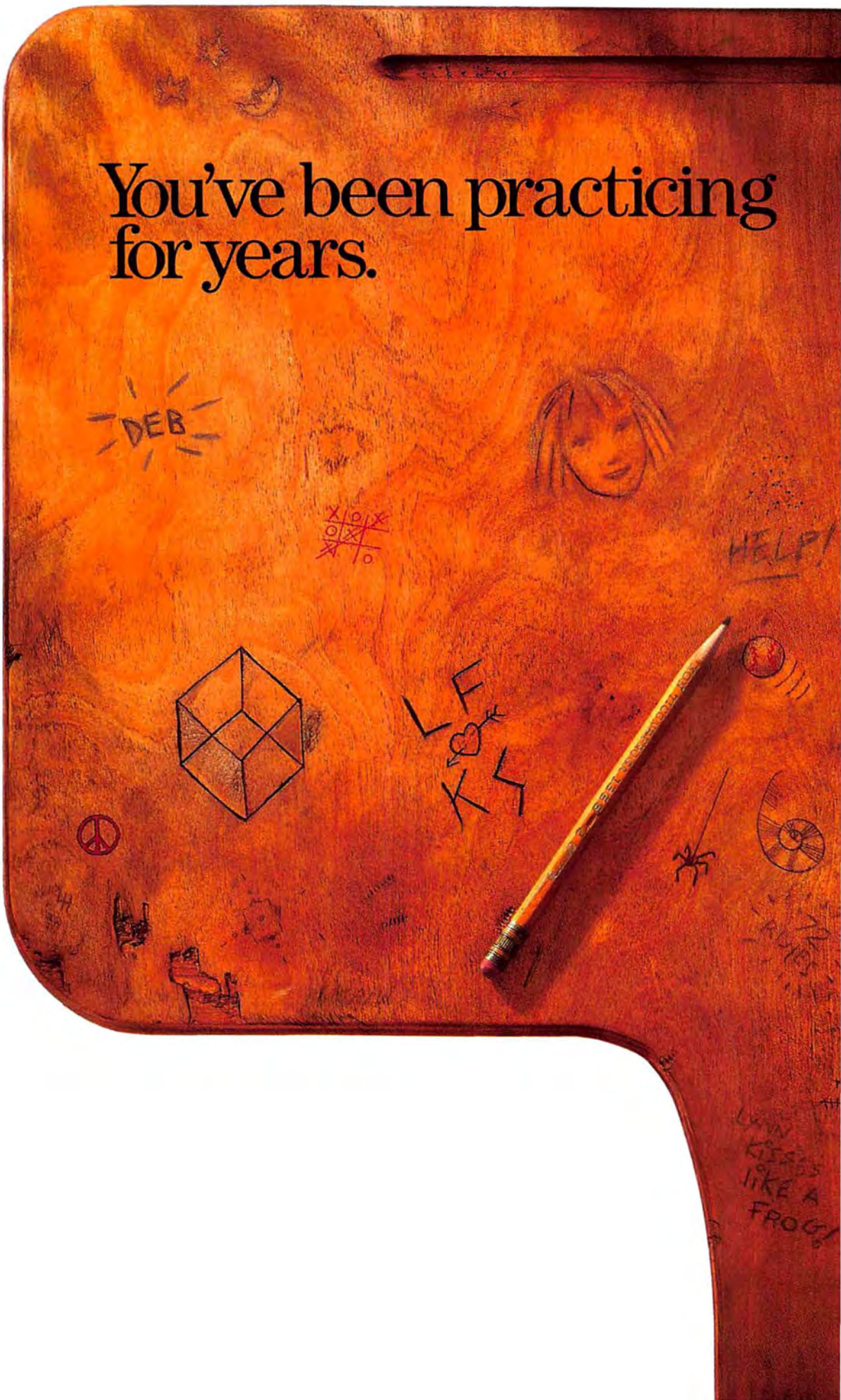
E-Machines, Inc.
9305 S.W. Gemini Drive
Beaverton, OR 97005
(503) 646-6699
$3,495

Sigma Designs SilverView S8 . . ½

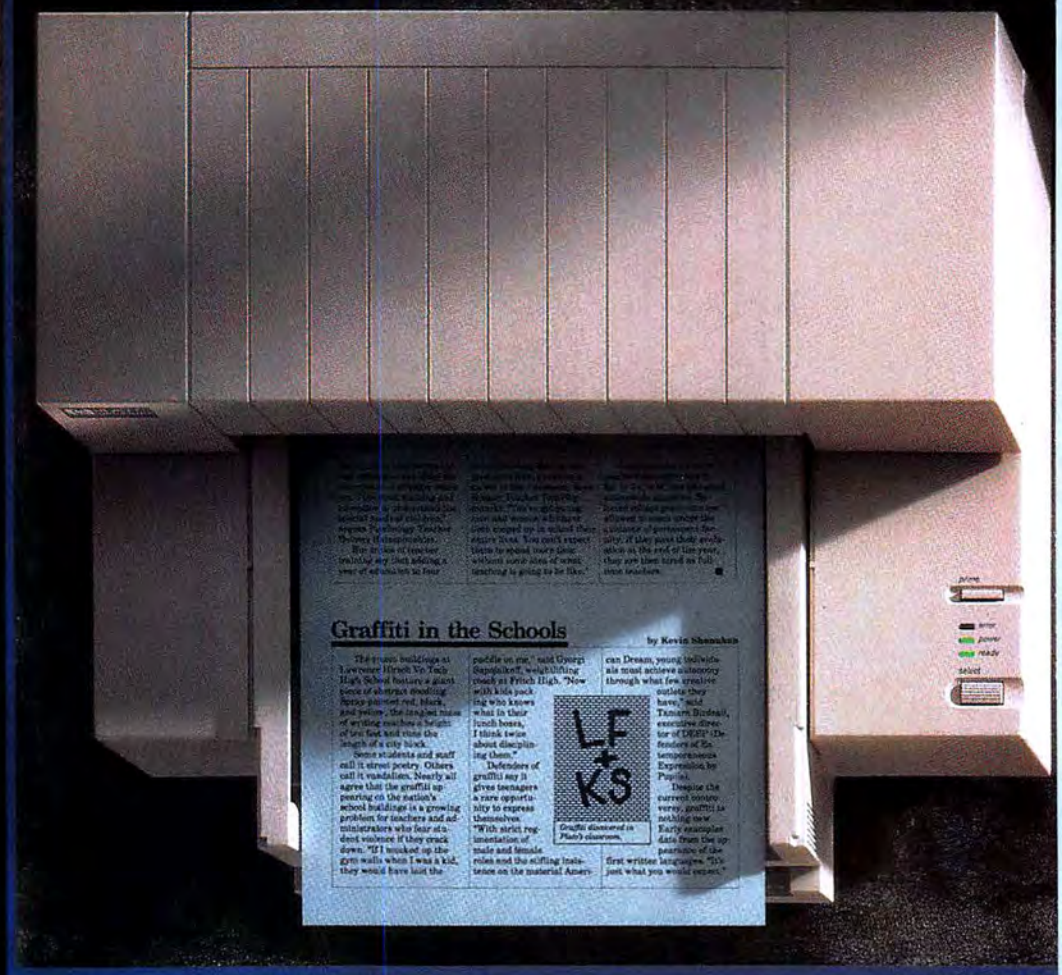
Sigma Designs offers three SilverView display systems, all built around the same 21-inch landscape monitor; the video cards determine the capabilities. To upgrade from the 1-bit system to gray scale, simply swap the 128K monochrome card for either a 512K or 1-megabyte version, depending on whether you want 16 or 256 shades of gray. Upgrading from 4 to 8 bits involves adding more memory to the existing card; no swap is necessary. We reviewed the 8-bit SilverView S8 display system, which had the largest viewing area (1,152 x 870 pixels) of any 72-dpi screen. It uses a greenish-blue phosphor that makes it noticeably cooler than the other monitors.

Pros: WYSIWYG display; largest 72-dpi screen; excellent gray linearity; good geometry; tilt/swivel stand; biggest screen for the money. **Cons:** Poor brightness, MTF sharpness, and focus; slight screen jitter; card not color-capable; no glare protection.

Sigma Designs, Inc.
46501 Landing Parkway
Fremont, CA 94538
(415) 770-0100
$2,999

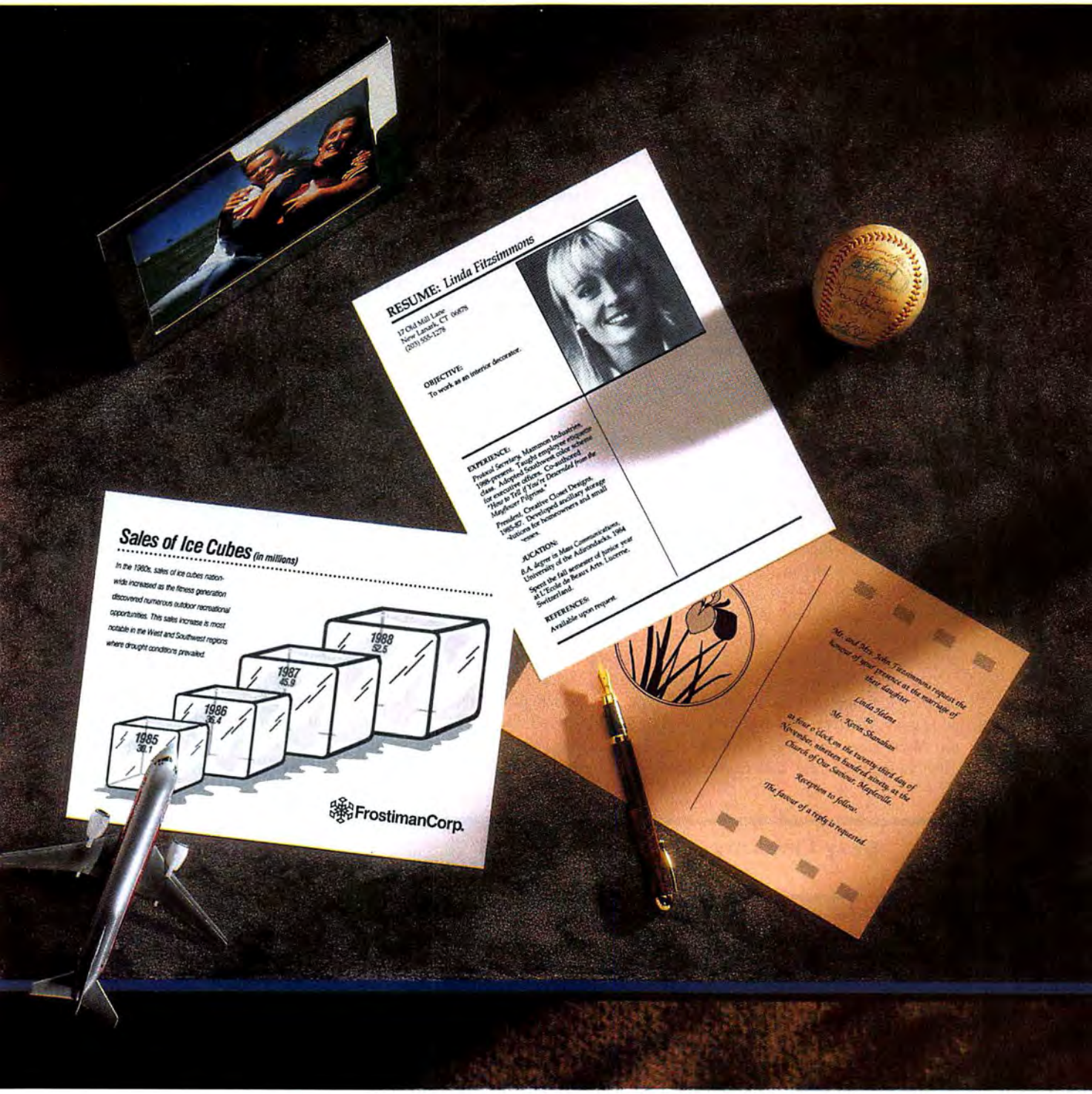

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MTF sharpness. The Apple Portrait Display, on the other hand, had the highest brightness overall *and* excellent MTF sharpness. The MegaScreen 2008 was in the brightness basement.

The Glaring Truth

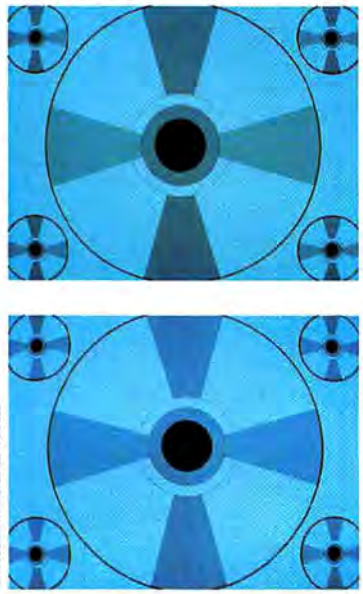
To check for glare, turn the monitor off so your observation isn't influenced by screen images. Monitors with untreated glass surfaces can turn into mirrors under some lighting conditions. An etched screen provides moderate glare protection; an OCLI (Optical Coating Labs, Inc.) coating virtually eliminates glare but shows fingerprints with amazing clarity.

Sometimes there's a trade-off between glare protection and brightness or contrast. The Philips tube used by the Miro monitor had such strong antiglare compensation that its contrast suffered severely. On the other hand, the Moniterm Viking unit had an OCLI coating but still provided a bright screen.

Don't despair if the monitor you want has poor glare protection. Several third-party manufacturers — such as Kensington Microware, OCLI, and NoRad — offer antiglare screens that can be attached to the front of most monitors. (For more information on glare treatments, see "Black & White & Read All Over," August '88.)

Figure 5: Bent Lines and Broken Eggs

Geometric linearity was checked with Larry Pina's Test Pattern Generator. The Ikegami screens in both the PCPC and SuperMac monitors exhibited the truest circles and squares (top). The Miro screen (bottom) had the poorest geometry, with "circles" that looked more like eggs.



PHOTOGRAPHY: PETER ALAN GOULD

Flicker Flack

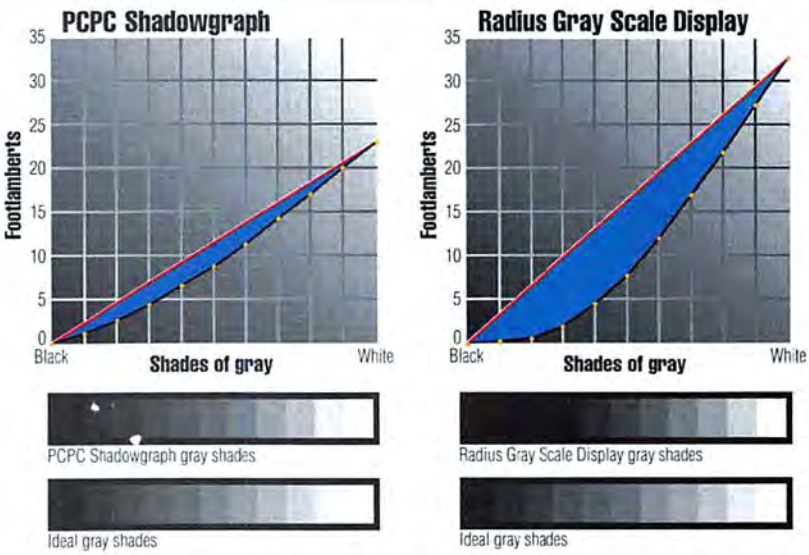
Flicker is a faint (but potentially maddening) pulsing of the screen image. It's caused by the combination of a low vertical scan rate and a short-persistence screen phosphor. Ideally, the electron beam that "paints" the display sweeps across the inner face of the tube (left to right, top to bottom) fast enough that the pixels that should be "on" remain glowing until the next pass of the beam. If the refresh rate is too slow and the phosphors begin to dim, successive screens don't blend together completely, and your eyes see each screen being replaced by the next — over and over and over again.

Although the perception of flicker is subjective, a vertical scan rate of 65 hertz (meaning the screen is refreshed 65 times per second) is generally considered sufficient to eliminate flicker. Our observations bear this out. The only monitors that exhibited flicker were the PCPC and

Figure 6: Gray Linearity

Gray-Scale scores	
PCPC Shadowgraph	84
MegaGraphics MegaScreen 2008	83
SuperMac 19" Gray Scale	81
Sigma Designs SilverView S8	80
Miro miroGRAPH Prisma GS	78
Apple Two-Page Monochrome	75
Apple High-Resolution Monochrome	72
E-Machines Big Picture Z21 IQ	68
Moniterm Viking 2/72 GS	68
Apple Portrait Display	67
Radius Gray Scale Display	67

Actual gray linearity as a percentage of theoretical perfection



Ideally, a monitor should display an area of 50-percent gray at half the intensity of pure white and likewise for other levels of gray. We measured brightness in 10-percent increments and calculated how close each monitor came to theoretical perfection (a straight line from black to white). The PCPC Shadowgraph (left) had the best distribution of gray levels, while the Radius Gray Scale Display (right) fared worst, with grays that were too dark. The scores of all the monitors are listed in order from best to worst.



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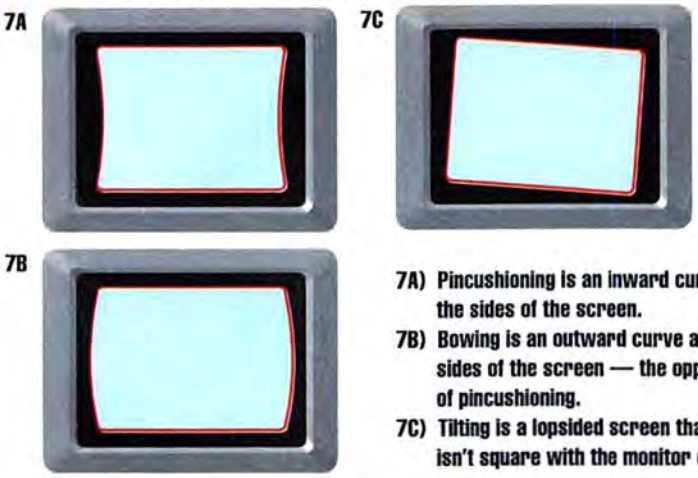
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Figure 7: Screen Distortions



7A) Pincushioning is an inward curve at the sides of the screen.
7B) Bowing is an outward curve at the sides of the screen — the opposite of pincushioning.
7C) Tilting is a lopsided screen that isn't square with the monitor case.

SuperMac units, which use an Ikegami tube with a vertical scan rate of 60 hertz. Moniterm's monitor also has a 60-hertz refresh rate, but it's flicker-free, presumably because it uses higher-persistence phosphors.

Unless you're technically oriented or plan to mix and match monitors and cards from different sources, you can ignore the manufacturers' hertz ratings for horizontal scan, bandwidth, and the pixel clock. These may be interesting for specsmanship, but vertical scan rate is the only one that affects flicker.

Decisions, Decisions

Now for the hard part: trying to find that one monitor with the optimum balance of specifications and performance. Many monitor characteristics feed on each other, and some are just plain contradictory. For example, greater brightness can lead to loss of focus, and better glare protection may reduce brightness or contrast.

You must also weigh intangibles such as software, length and scope of warranty, and physical aesthetics. While we've sought to impart a solid understanding of the issues, ultimately the choice is yours.

Associate editor Owen W. Linzmayer has learned about gray from the air pollution in his native New Jersey and the fog surrounding his current residence in San Francisco.

Acknowledgments

MacUser Labs would like to thank technical consultant Ken Holt, project leader Paul Yi, and the members of our advisory panel — Bob Morris of E-Machines and Ed Schaider of Sigma Designs.

The Bottom Line

Grading our crop of gray-scale display systems was no easy task. But when testing was finished, the **PCPC Shadowgraph** ($2,895) had the highest marks overall. The PCPC uses the same Ikegami tube found in the **SuperMac 19" Gray Scale Monitor** ($3,294), and both units performed admirably in every way, with a slight flicker being their only flaw. Its 72-dpi resolution gives desktop publishers true WYSIWYG, and the 1,024-x-768-pixel screen displays almost two complete pages. While the SuperMac system has some useful features — a fast, hardware-based, virtual-screen capability and excellent large-screen utilities — it's hard to justify spending several hundred dollars more for them.

In the battle of the 21-inch big boys, the clear winner is **E-Machines' Big Picture Z21 IQ.** This $3,495 display system has it all. If you insist on 72 dpi for your DTP documents, you've got it — and 80, 40, and 36 dpi to boot, all at the touch of a key. It has the largest possible viewing area with 1,280 x 960 pixels at 80 dpi, and its virtual-screen capability lets you create truly enormous desktops. Since the pan and zoom features are hardware-based, they're lightning fast and very smooth. It leaves something to be desired in gray linearity and MTF sharpness, but to the naked eye the screen looks fine.

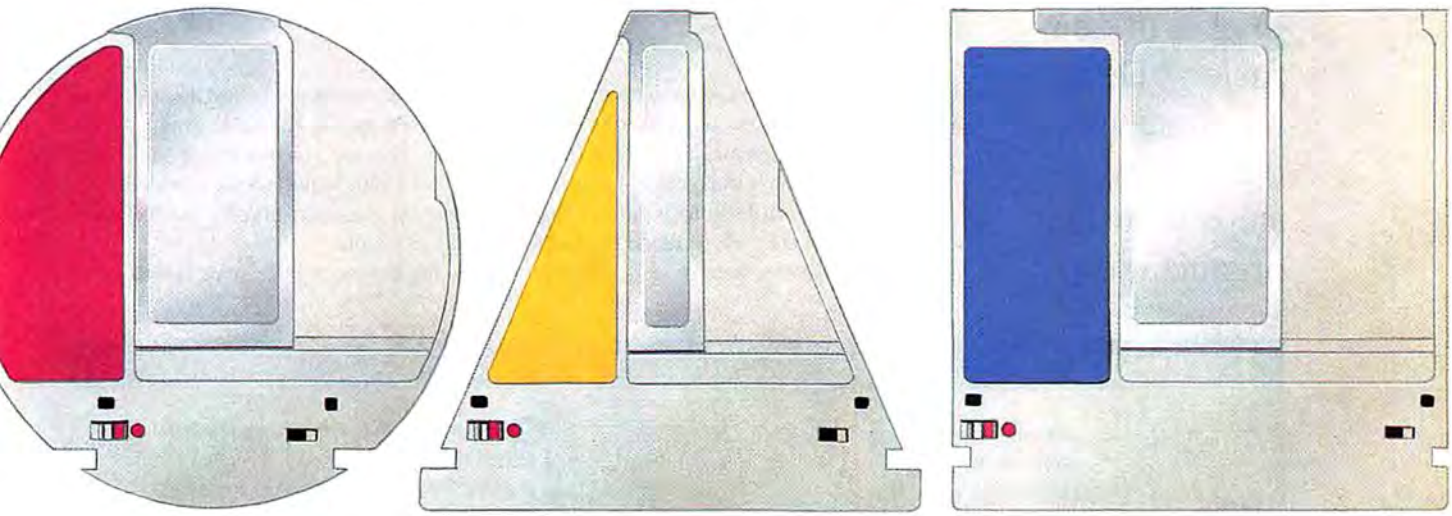
Apple's Portrait Display ($1,797) is uncontested in the gray-scale, full-page–monitor market, but that doesn't mean it isn't an excellent monitor in its own right. It ranked above average in all our tests except gray linearity. This is the budget alternative to a two-page display system. With 640 x 870 pixels, it can depict an entire page of text and graphics — though at 80 dpi, the image isn't true WYSIWYG. Too bad this wonderful monitor is limited to 16 grays; otherwise it would receive our highest recommendation.

As an entry-level, gray-scale monitor, the 12-inch **Apple High-Resolution Monochrome Monitor** ($399) is hard to beat. But instead of driving it with Apple's $648 8-bit board, opt for the $995 RasterOps ColorBoard 264 with its 32-bit QuickDraw capabilities. It costs more at the outset, but when you're ready to move on to color, you'll be glad you spent the extra bucks for the extra bits.



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POWER TOOLS

EDITED BY
JAMES FINN AND
KRISTI COALE

Is your hard disk a tangled thicket of confusion? Here are three simple but effective steps to instant organization.

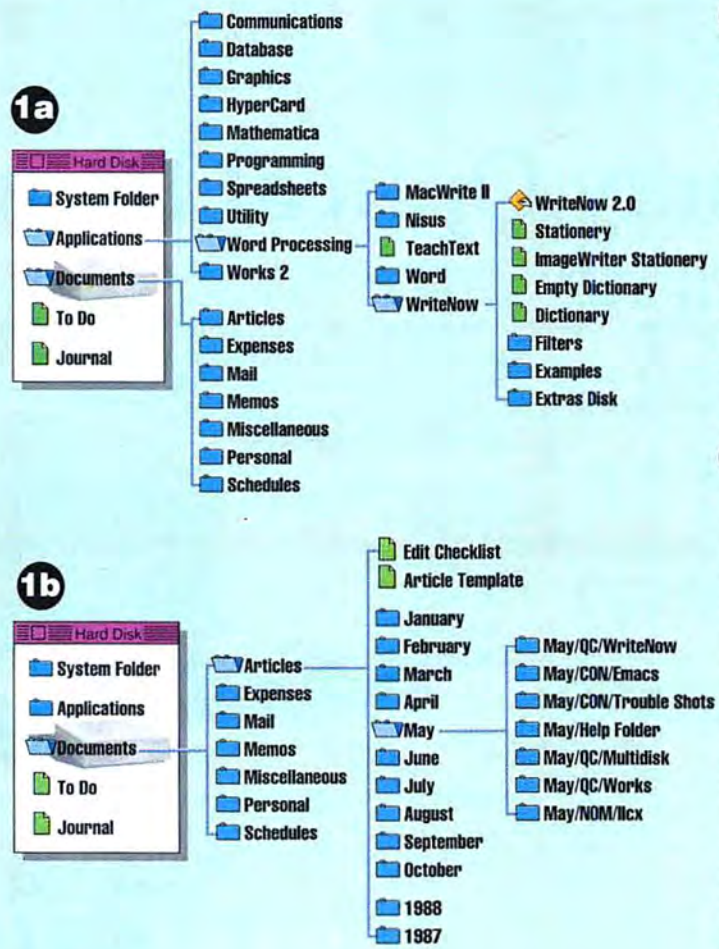
Hard-Disk Sanity

Hard disks keep getting larger — more applications, more documents, more confusion. That folder you tossed a few Word documents into last year now has 400 files in it; when you double-click on it, it's not just coffee-break time — you have time to brew a fresh pot before it opens. You find yourself too dependent on Apple's Find File DA, because you no longer remember where even your important files reside.

Somehow, your hard disk doesn't feel user-friendly any more.

Making it more so is, to some extent, up to

1: Organizing Files



a Organize Hierarchically by Function. At the root level (the window you get when you open the disk itself), create separate folders for applications and documents. You may want to keep a few frequently accessed files at or near the root level, such as the To Do and Journal files in the illustration. The Applications folder contains folders for categories of applications, which in turn contain folders for individual applications — if you don't have very many applications, omit the categories level. Be flexible; some applications, such as HyperCard, can be their own category. The Documents folder contains folders for your main categories of documents. This is a clean, simple structure; finding things is a snap.

b Organize Chronologically. Some documents are naturally grouped by date, such as articles for this monthly magazine. The Articles folder contains two frequently used documents, Edit Checklist and Article Template; everything else is organized into folders based on month names. Months are cyclical and have a way of coming back to haunt you, so make sure your scheme accounts for years. In the illustration, the monthly folders refer to 1989; older months have been moved into the 1988 and 1987 archival folders. If you use two-digit numbers for the month names — 07, 08, 09, 10 — then the Finder's View by Name sorts the folders chronologically. Similarly, if you use two-digit year and month names — 88/09, 88/10, 89/01 — then View by Name takes the year into account in this chronological sort.

ILLUSTRATION K. DANIEL CLARK

2: Interfacing with the Finder

a Use Views and Color. You can view a window in several ways. View by Name, Kind, and Date are great for locating files quickly — View by Date is especially helpful, because it lists the most recently changed files first. For day-to-day work, though, View by Small Icon is the most flexible mode. It's almost as compact as View by Name, yet the view is two-dimensional, and you can select files by dragging a selection rectangle. The catch is that you must arrange the icons. (The special June '89 all-ResEdit Tip Sheet explained how to change the default icon-layout parameters — how they're spaced and staggered, for example — if you don't like the default values.)

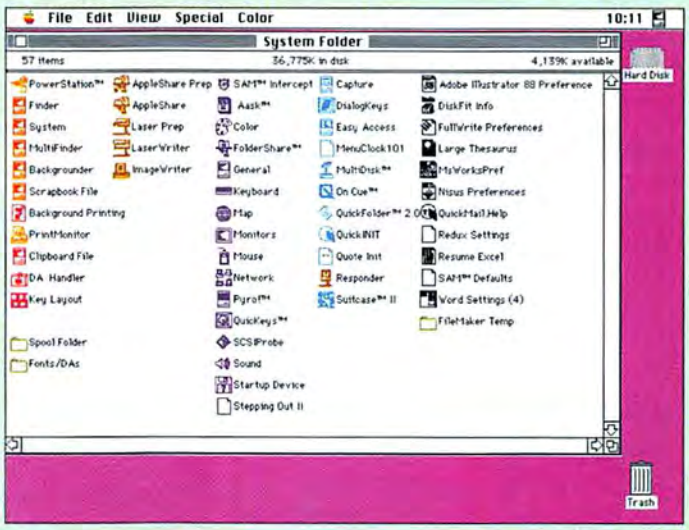
This illustration shows a System Folder viewed by small icon. Files are both color-coded and arranged in columns. From left to right, the columns are basic system files, network and printing control files, Control Panel documents, Startup documents, and miscellaneous application-specific files. The color-coding gives two views of the files —although the Responder is correctly placed in the column of Startup documents, it's colored brown to show that it's a network document as well.

Some columns are alphabetized. Here's a quick way to alphabetize a column of icons: Select them, drag them to a new folder, set that folder to View by Name, then reselect all the files and drag them back to the original folder. And don't forget that you can make a column look tidy by dragging a selection rectangle around it and then choosing Clean Up Selection from the Special menu.

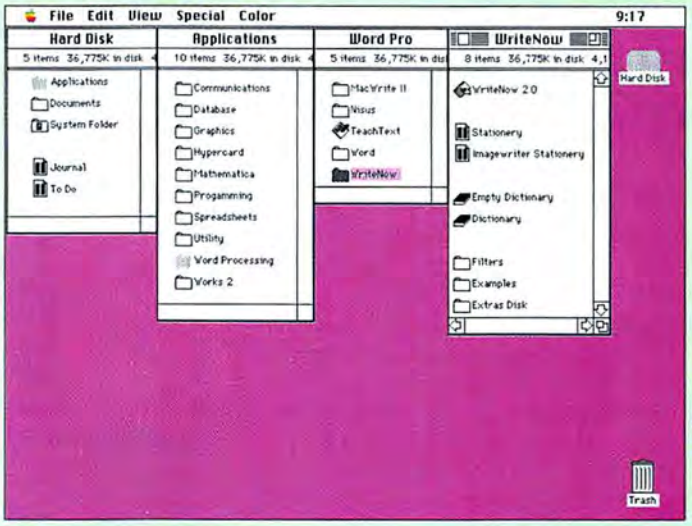
b Neatness Counts. It's worth the effort to arrange your desktop neatly — and to keep it that way. You can size and place windows so that as you open nested folders, the display is compact and all the windows are visible.

You can also drag a folder to the desktop and keep it there over the span of your project, making it easily accessible. Later, you can select the folder and use the Put Away command in the File menu to return it to its home location.

2a



2b



you. How you organize your hard disk determines, for example, how easily you can get to your files and applications. Here are a few simple approaches to organizing that disk. Keep in mind, however, the bottom line when working with your hard disk: If you find a method that works for you, that's the best one. These ideas about disk organization will work best if you adapt them to your needs. It's your disk, so you can do anything you want with it. Use these suggestions as guidelines, but don't be afraid to make exceptions and organize things in a way that works for you. You may also

By James Finn

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TECHNIQUES

3: Final Frontiers

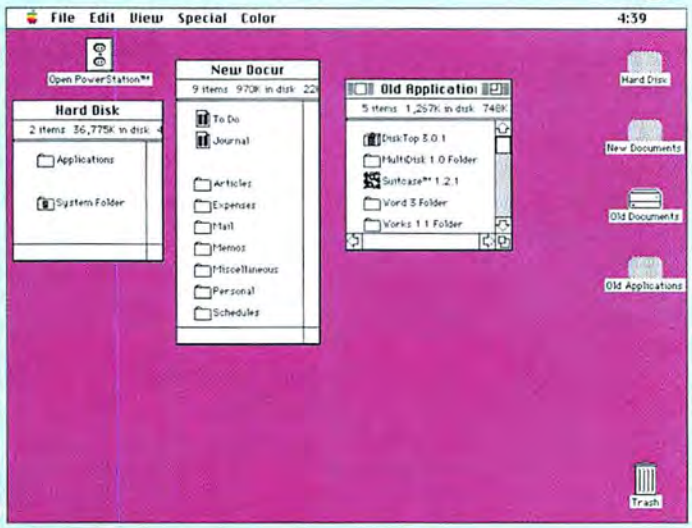
a Partition Your Hard Disk. Partitioning software (including ALSoft's MultiDisk, FWB Software's Hard Disk Partition, and the HD Partition program in Symantec Utilities for Macintosh) divides your disk into multiple *volumes*, each of which is its own "virtual" disk. You can use partitions to help organize your files. They're a great aid with most backup programs, which work volume by volume. If you create a small partition for your recent documents, you can back up that volume daily and the backups will go quickly. Keep older documents in a separate partition. For security, partitions can be password-protected, and if you share your hard disk, partitions can give all users their own private work areas.

I keep a partition that contains older versions of applications. Sometimes it's necessary to use an old version of a program, but you don't want both the old and new version on the same volume, because when you double-click on a document, you don't know which version of the application will open. I solve the problem by mounting the Old Applications partition only when I need it.

The Finder slows down when a disk has too many files and the System Desktop file gets too big; partitioning your disk limits each volume to a size the Finder can manage.

b Keep Folders Small. The more items there are in a folder, the longer it takes to open it, so you want to keep folders small. On the other hand, when folders contain fewer items, folder nesting becomes deeper. You'll want to find a balance — between too many items in a folder and too many levels of nested folders — that works for you. Some programs locate files by using their *full pathname*. This includes the name of the volume the file is in and every folder name, in order, on the path to the file, with each name separated from the next by a colon (:). For example, the full pathname to WriteNow 2.0 in the hierarchical organization suggested earlier is Hard Disk:Applications:Word Processing:WriteNow:WriteNow 2.0. As you can see, the deeper folders are nested, the longer the pathnames get. Most programs can't handle full pathnames longer than 255 characters. This 255-character limit is also a reason not to make file or folder names too long.

3a



3b

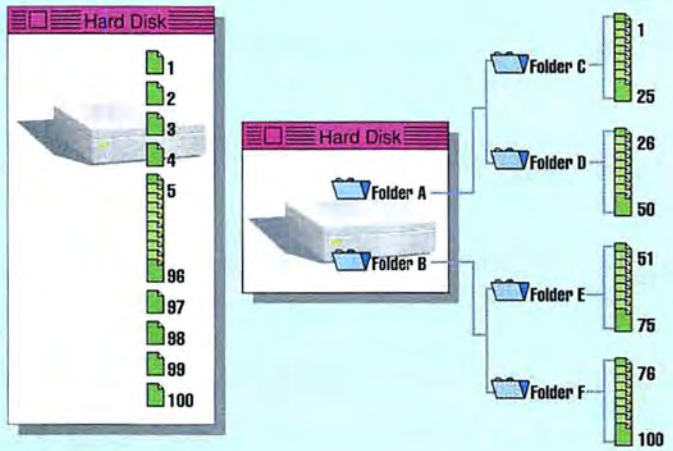


ILLUSTRATION K. DANIEL CLARK

want to try one of the several commercial products for organizing your hard disk, such as MacTree or XTreeMac. And if you want faster access to your applications and documents than the Finder provides, see "Losing Your Finder" in Power Tools, September '89, which discusses DiskTop, PowerStation, Disk Tools Plus, and On Cue. Thanks to all the *MacUser* editors who showed me their idiosyncratic hard-disk organization schemes.

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Macros Make Mightier Macs

By Michael Swaine

Apple got the metaphor for the trash can wrong. Trash cans don't just empty automatically; you have to haul them out to the curb at an ungodly hour. Painful as these early-morning trips may be, the benefits of a system that requires a deliberate act to empty the trash are obvious, and Apple has finally seen them.

Whether *you* will ever see them depends on whether you can afford to upgrade to the 2 megabytes of memory that version 7 of the system software will require. Among the nice features of System 7, when it is released, will be a Finder that finds and, yes, a trash can that empties on request rather than on whim. But you don't have to wait or buy more memory just to get a better trash-can metaphor. You can implement your own trash-disposal system with a personal macro.

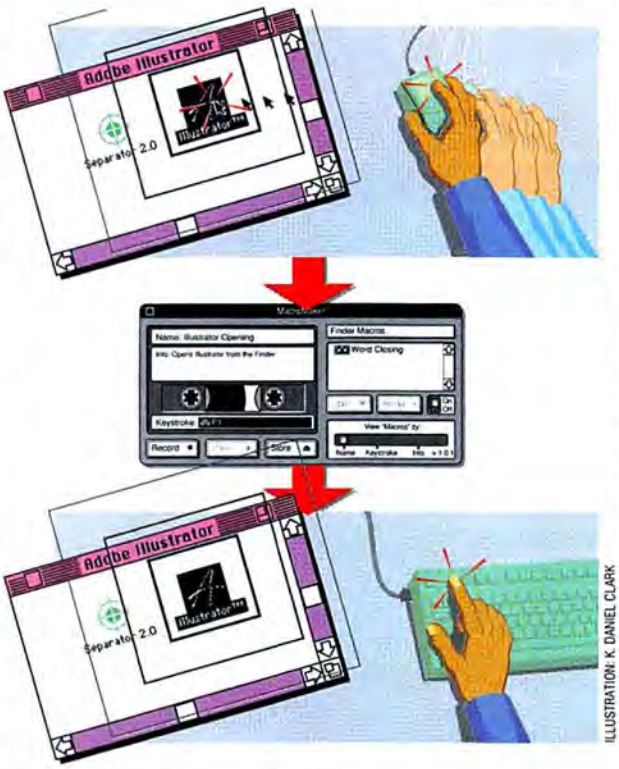


ILLUSTRATION: K. DANIEL CLARK

MacroMaker is a free utility included with System 6. It can record sequences of mouse and keyboard actions; the resulting recording is called a macro. You can play back macros with a single keystroke — a simple way to customize your Mac.

MacroMaker, the Misunderstood

Little has been written about MacroMaker, the macro-recording utility Apple includes with System 6. This is unfortunate, because MacroMaker's ability to turn on a recorder and record mouse and keyboard actions for later playback is useful.

It's free and ubiquitous, so you can more or less count on its being there (wherever *there* is). It has some surprising strengths, including the ability to create a macro that can run across a system restart, which means that you can, for example, move certain files into or out of the System Folder, restart the Mac, and then perform various startup actions, all with a single keystroke. Although MacroMaker is less powerful than several third-party products — such as Genesis Micro Software's AutoMac III (see Quick Clicks, February '89), CE Software's QuicKeys (see "Command Performance," January '88), or Affinity Microsystems' Tempo II (see Quick Clicks, December '88) — it is an adequate tool for creating what I call personal and ad hoc macros.

Personal Macros

Often the spark of inspiration leaps from the friction of conflicting ideas. Two powerful but conflicting ideas in human-interface design are personalization and standardization. Personalizing your system means moving away from public standards and conventions, but this can make your tools less portable, harder for visitors to your desktop to master, more troublesome on networks, and harder to upgrade as new system software comes out. Adhering slavishly to public standards and conventions, on the other hand, abdicates the personal power of personal computing. Every serious user of a personal computer needs to work out a balance between these conflicting ideas. Personal macros are relatively benign personalization tools: They provide shortcuts that can be taken or bypassed. Paradoxically, they depend on a kind of standardization — a personal standardization.

Here's a simple example of a macro that I have developed for organizing information on my desktop. Its usefulness comes from its appropriateness to my system; you should no more adopt my macro than plug your mouse into the left ADB port of your keyboard because I do so. Instead, you should consider whether the systems you have developed for dealing with your Macintosh suggest any

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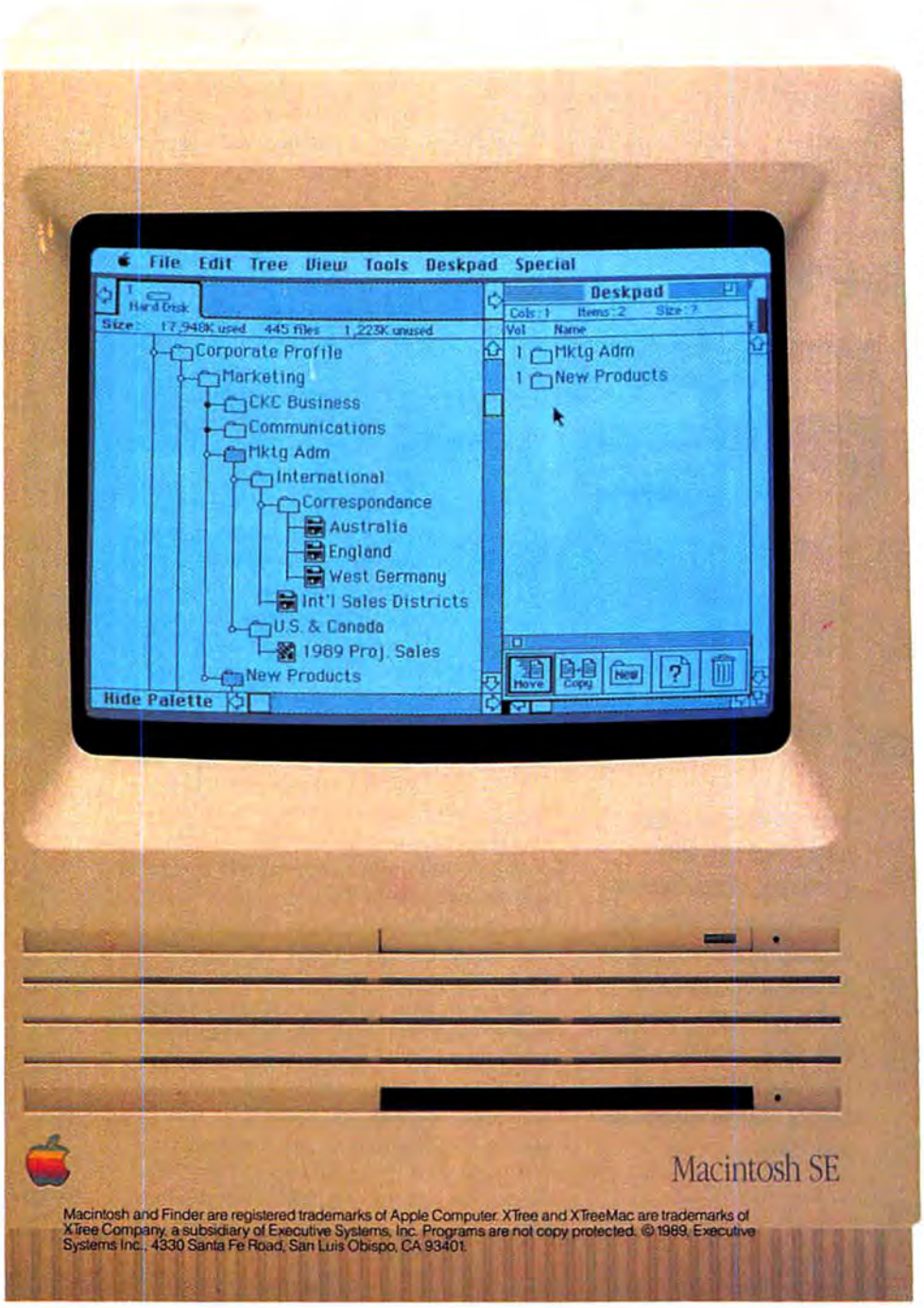
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analogous personal macros for you.

For this example, I use icon color and location on my Mac II desktop to help organize my files and folders. This is a personal standardization that doesn't permit portability. In this scheme, my boot-disk icon, System Folder, and certain related icons are colored yellow and kept near the top of the screen (yellow isn't one of the standard desktop colors, but you can change these colors to include others). One of the benefits is that I can record a macro to tidy up my desktop, changing the color of icons according to their screen location. As long as I have placed icons in the zones where they belong, I can color-code them with a single keystroke. To create the macro, shift-click in the screen locations where system-related icons are kept and select yellow from the Color menu, repeating this procedure for each grouping of icons to color-code.

Ad Hoc Macros

Even more specialized than personal macros are ad hoc macros. My color-coding macro works because the assumptions it makes about locations of objects on the desktop are part of my system for keeping track of things. But often a sequence of actions that you might want to record as a macro depends on assumptions that may not hold true as faithfully as my color-location conventions. These can involve assumptions about the location or even the presence of a particular file in a particular folder. Even if a macro depends on information that may change, consider recording the macro if it is relatively harmless (that is, it does not delete files), is fairly short, and can be used several times before it becomes obsolete. If you get in the habit of recording repetitive actions, you will find that the process adds only a few seconds the first time, saves a lot of time later, and will at worst cause a small delay if you accidentally use it after its assumptions have changed.

When such an ad hoc macro ceases to work because of changes in its environment, throw it away. You may deplore the throwaway mindset as it applies to cheap consumer goods that fill up landfills with nonbiodegradable plastic junk, but disposable macros simply disappear when you throw them away.

Ad hoc macros need not be clever or efficient; the efficiency comes from the time saved each subsequent time you perform the action. Don't worry if you also record harmless errors and false steps, such as pulling down the wrong

Finding the Home Folder

Like a family tree, nested folders provide links to earlier and later generations. New folders, like children, move away from their parent folders. Keeping track of these stray folders is a bit tricky, but it's possible with the macros we're going to develop. NewFolder and FindParent use only Apple-supplied tools and let you keep track of the original home of a folder, wherever it may be moved. NewFolder creates a folder and stores in its Info window the name of its parent folder — the folder in which it was created. FindParent invokes the Find File DA to track down the parent folder named in a selected folder's Info window.

Throughout the recording process, use the keyboard equivalents for Cut (Command-X), Copy (Command-C), Paste (Command-V), New Folder (Command-N), and Get Info (Command-I).

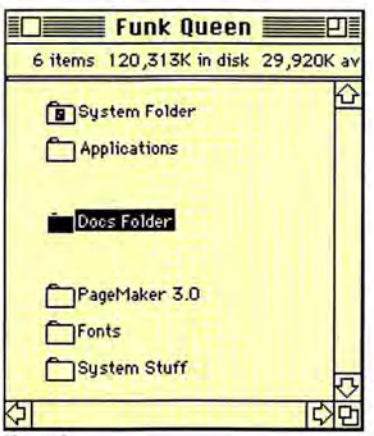


Figure A

1. Select any folder on the desktop. This is the folder into which you will place your new folder (see Figure A). Pull down MacroMaker's menu and select Start Recording.

2. Copy the parent folder's name to the Clipboard.

3. Use the New Folder command to create a new folder.

4. Use the Get Info command to open the Info window of the new folder.

5. Type `This Folder's Original Home:` (make sure a space follows the colon) and then Paste in the parent folder's name. Close the Info window.

6. Select Stop Recording from the MacroMaker menu. Name your macro NewFolder and store it, assigning it the keystroke combination Command-Shift-N. Close the MacroMaker window and name the new folder whatever you like.

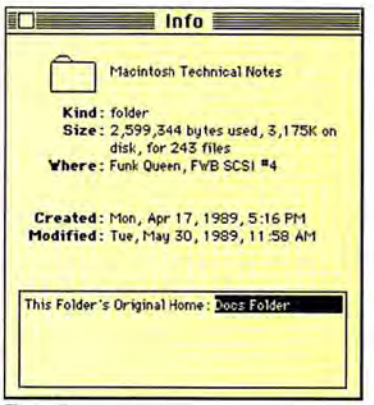


Figure B

7. Record FindParent. Select the new folder and select Start Recording again.

8. Get Info for this folder.

9. Highlight just the folder name (not the `This Folder's Original Home:` part). Select all the way to the end of the line — because you don't know how long other folder names will be (see Figure B).

10. Copy the name to the Clipboard.

11. Close the Info window and select the Find File DA.

12. Paste in the folder's name and then press Return to use the saved folder name (see Figure C).

13. Save this macro as you saved the other, giving it the name FindParent and the keystroke combination Command-Shift-F. Now that you have recorded NewFolder and FindParent, test them.

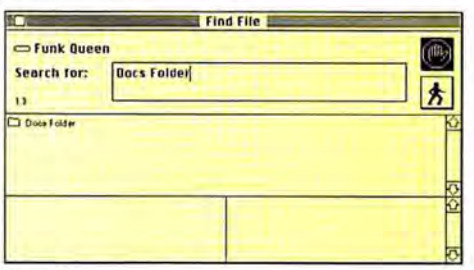


Figure C

Select a folder and create a new folder by typing Command-Shift-N. Single-click on the new folder's icon to select it and type Command-Shift-F to invoke FindParent. FindParent should track down the new folder's parent folder and tell you exactly where to find it on your disk.

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menu. These workers are temps — it isn't important that they perform smoothly as long as they get the assigned job done.

Cooperation Counts

Keyboard and mouse actions can get out of sync on playbacks of your macros. For example, a mouse action designed to come after a keystroke may precede it, rendering the macro useless. You can remedy such problems by rerecording the macro, using the keyboard instead of the mouse. Most mouse actions also have keyboard equivalents, such as Command-V to paste from the Clipboard. As long as you don't plan to carry macros from one machine to another, it should be fairly easy to fix any synchronization problems.

Another synchronization fix is Easy Access. A startup utility for those who can't use a mouse, Easy Access turns the numeric keypad into a substitute mouse. Put Easy Access into your System Folder and restart your Mac. Command-Shift-Clear invokes the Easy Access–mode mouse keys. The 5 key performs the mouse-button functions (clicks and double-clicks), and the other numeral keys from 1 through 9 move the mouse. The 0 key locks the mouse button down, and the period key unlocks it. This is documented in the New Features Update bundled with System 6.

Hands-On Macros

You would not want to spend time developing large macros only to throw them away, so personal and ad hoc macros should be short. That doesn't mean they can't be complex, because macros can build on other macros. If you have developed a fairly stable personal macro, you can invoke it as part of another macro just as though it were a permanent capability of the Finder. This makes the second macro dependent on the first, but if you use this technique judiciously, you can develop complex macros by taking only small steps as needed.

You'll have a chance in the sidebar to develop two macros. These are macros that I have found useful; you may not, because they are personal tools. But they demonstrate the general procedure for recording macros.

A Trashy Contest

Speaking of macros, I implied in the opening of this column that it was possible to simulate the action of the System 7 trash can, using a personal macro. I'll award this month's T-shirt for the first such implementation I receive that I consider sufficiently elegant. The solution must revolve around a MacroMaker macro, although other system utilities can be used to spiff up the new trash solution.

Last month I asked how one small window could ever have appeared in front of a large, screen-filling window. The answer I had in mind involves a feature of the Finder that few people know about. It's called Title Bar Click, and what it does is simple: When you click on the title bar of a window, the parent window is selected and brought forward. That's how I stacked the windows the way they were.

What's that you're saying? You just tried clicking on a window's title bar, and nothing happened? That's right; this option is initially turned off, and the only way to turn it on is with a tool such as ResEdit. I'll explore these utilities next month.

Adhering slavishly to public standards and conventions, on the other hand, abdicates the personal power of personal computing.

Keyboard Quick Reference

Here is a quick-reference chart for some common characters that don't appear on your keyboard because they require use of the Option key. Clip it and keep it near your Mac for handy reference. Remember, you can see all available characters by using Apple's Key Caps DA.

Accents Type these key combinations followed by the letter you want to accent:

è	Option-`
é	Option-e
ê	Option-i
ë	Option-u
ñ	Option-n

Business and Finance

©	Option-g
®	Option-r
™	Option-2
•	Option-8
¢	Option-4
£	Option-3
¶	Option-7
¥	Option-y

Punctuation

“	Option-[
”	Shift-Option-[
‘	Option-]
’	Shift-Option-]
«	Option-\
»	Shift-Option-\

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TIP SHEET

Tip Sheet

Readers Share Their Tips and Tricks

FreeHand 2.0

When using one of the PostScript lines from FreeHand's UserPrep file, you might want an outline of the PostScript line instead of a solid line. For example, you might want an outline of the dot pattern as your printed line. Here's how to get it:

1. Choose PostScript from the Line menu and type `Dot` (or any other name) in the dialog box.
2. Tab to the PostScript entry box and enter `{dot} 10 10 1 0 newrope`. (The word in braces should be the name of the predefined pattern you want to use from UserPrep.) The four numbers refer to width (in points), height, the spacing between dots, and the color (0 = black, 1 = white). The last term, `newrope`, is a routine from UserPrep.
3. Choose Lines from the Line menu and select the line name, Dot, you just created.
4. Click on the Copy button. The PostScript dialog box will appear with the attributes of the first line.
5. Change the name to something such as Dot2 and change the numbers in the PostScript entry box to `{dot} 9 9 2 1 newrope`.
6. Draw a line with the line tool. Choose Dot from the Line menu and clone (Command-=) the line.
7. Return to the Line menu without moving the lines and choose Dot2. When printed, the cloned line will print as white over the black-dot line beneath it, giving the effect of an outlined pattern.

Bruce Nemecek
Cedar Rapids, IA

Lasertalk

When you're previewing PostScript files from Word 4.0 in Lasertalk, you'll have problems reducing the screen image with Lasertalk's built-in routines. When you enter the reduction routine in the interactive window, the Word PostScript header that is downloaded with the document negates its reducing effect on the screen image. Here's a way to get around this limitation:

1. In Lasertalk, press Command-K immediately after clicking on OK in the Print dialog box to open the PostScript file of your Word page. If you use MultiFinder, this step will work only with Background Printing turned off in the Chooser.
2. Find the string `%%EndDocumentSetup`.
3. Type `r8` (or whichever one of Lasertalk's built-in scaling reduction factors you want to use, as shown in Figure 1). Also be sure to strip the last few lines of the document that cause a `showpage` to be executed.
4. Download the file, and the Word page, complete with any PostScript effects, will preview correctly in a reduced view (see Figure 2).

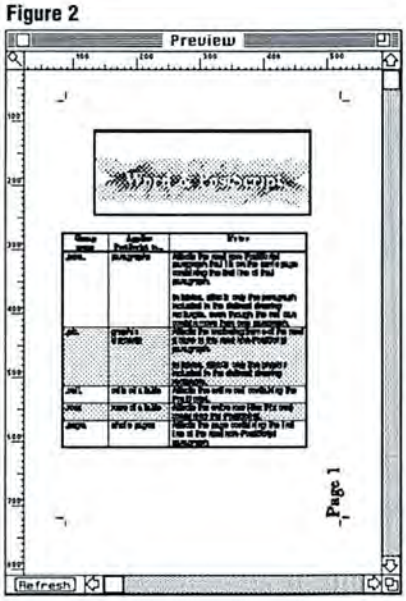
David Cannon
Milwaukee, WI

Figure 1

```
md begin

TT -31 -30 761 582 100 72 72 1 F F F F T T T psu
(IIcx; document: Example.MSW)jn
0 mf
od
%%EndDocumentSetup
%%Page: ? 1
r8
op
```

Figure 2



Figures 1 and 2: Previewing a page from Word in Lasertalk takes some doing. A reduction factor (r2, r4, or r8) must be typed into the document's PostScript rather than in the interactive window. The result is a better PostScript preview than you would have in Word.

FreeHand 2.0

Figure 3



Figure 4

The Children's Television Workshop

Figures 3 and 4: Want to know how to turn Figure 3 into Figure 4? In FreeHand's Fill & Stroke dialog box, you'll get Figure 3 if you enter the point size you really want. To fix this, place a period before the point setting; .20 results in 20-point type being printed.

When you specify a point size for the stroke of text in the Fill & Stroke dialog box, the stroke does not print properly (it's several times too large) if the text isn't joined to a path. A simple fix is to place a period before the point setting in the dialog box. A stroke set at .20 prints out as 20 point (see Figures 3 and 4).

Michael D. Corman
Columbus, GA

Compiled by Gregory Wasson

FONTOGRAPHER

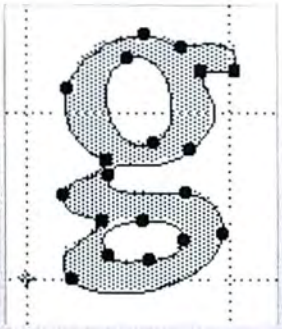
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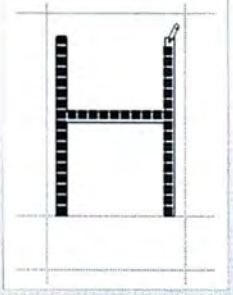
Automatic PostScript Hints

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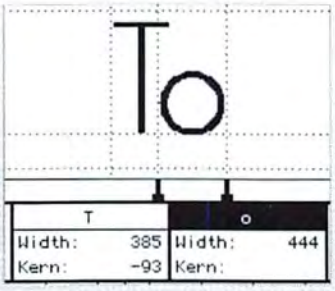
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TIP SHEET

PageMaker 3.01

When printing a document with spot colors in PageMaker, the program does not print the color name on the separate plates if the image area occupies the entire printed page. This can be extremely confusing to the stripper and the pressmen, especially if the document has many pages.

To keep the colors in order:

1. Insert a small text block in the top left corner of the document's master pages.
2. Type the name of a spot color you're using and then make the text that color with the color palette.
3. Do the same with every color you use in the document. You can stack all the text blocks on top of each other. When you print the document, these color names will print out, but since they're color-coded, they print only on the pages that have red, green, blue, and the like, on them.

Don't forget to tell the pressmen to cover the color designators when they expose the page for printing.

Mark Espich
Columbia City, IN

SimCity

SimCity has an annoying habit of resetting the tax rate to zero when you load a saved city. If you save and quit from the loaded city in midyear, you'll find that when January rolls around, several months have gone by without any taxes being collected. This can be bad news for a city already on the brink of financial disaster and beset by earthquakes, nuclear

PageMaker 3.01

Here's an easy tip for desktop publishers who need to keep track of how many hours they spend on a PageMaker job — and it's painless and cheaper than most of the software designed specifically for time tracking.

Create a small chart on the Pasteboard, just off to the side of a page. Create such columns as Date, Time Started, Time Ended, and Hours in the chart, using tabs. Each time you open the document, add a new row and enter the pertinent information; just before you close the document, fill in the Time Ended column. This way you'll always have accurate data handy for your invoice for a particular project (see Figure 5).

Donald Gambino
Woodhaven, NY

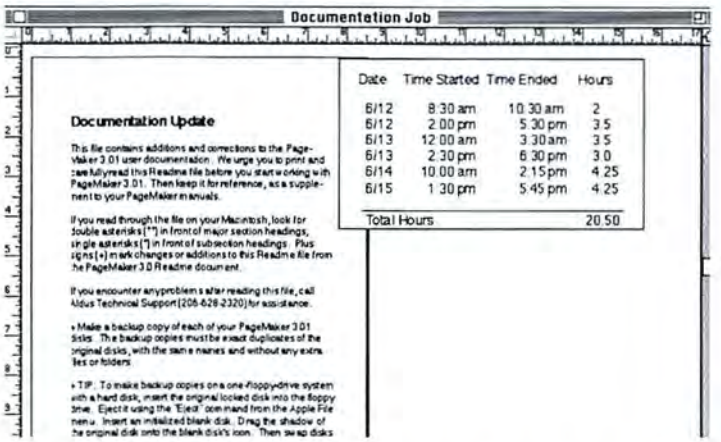


Figure 5: To keep track of the time you spend working on a specific PageMaker document, draw a box just off the side of a page and divide it into four columns labeled Date, Time Started, Time Ended, and Hours. After each work session, record the date and times. This will help you itemize your labor for billing or record keeping.

Tip of the Month

You can customize the on-line Help file for MacWrite II in HyperCard. For example, you can add new cards describing in-house style rules, special ruler settings for different kinds of documents, or any other information you need (see Figure 6). MacWrite II automatically opens any stack as its Help file as long as the stack is called MacWrite II Help and is in the same folder as the application.

David Valiulis
Scotts Valley, CA

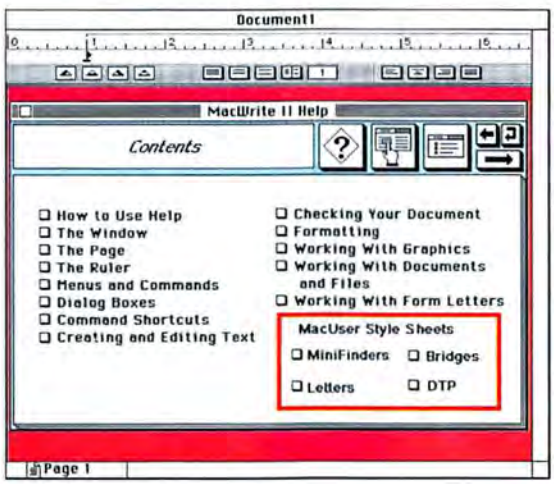
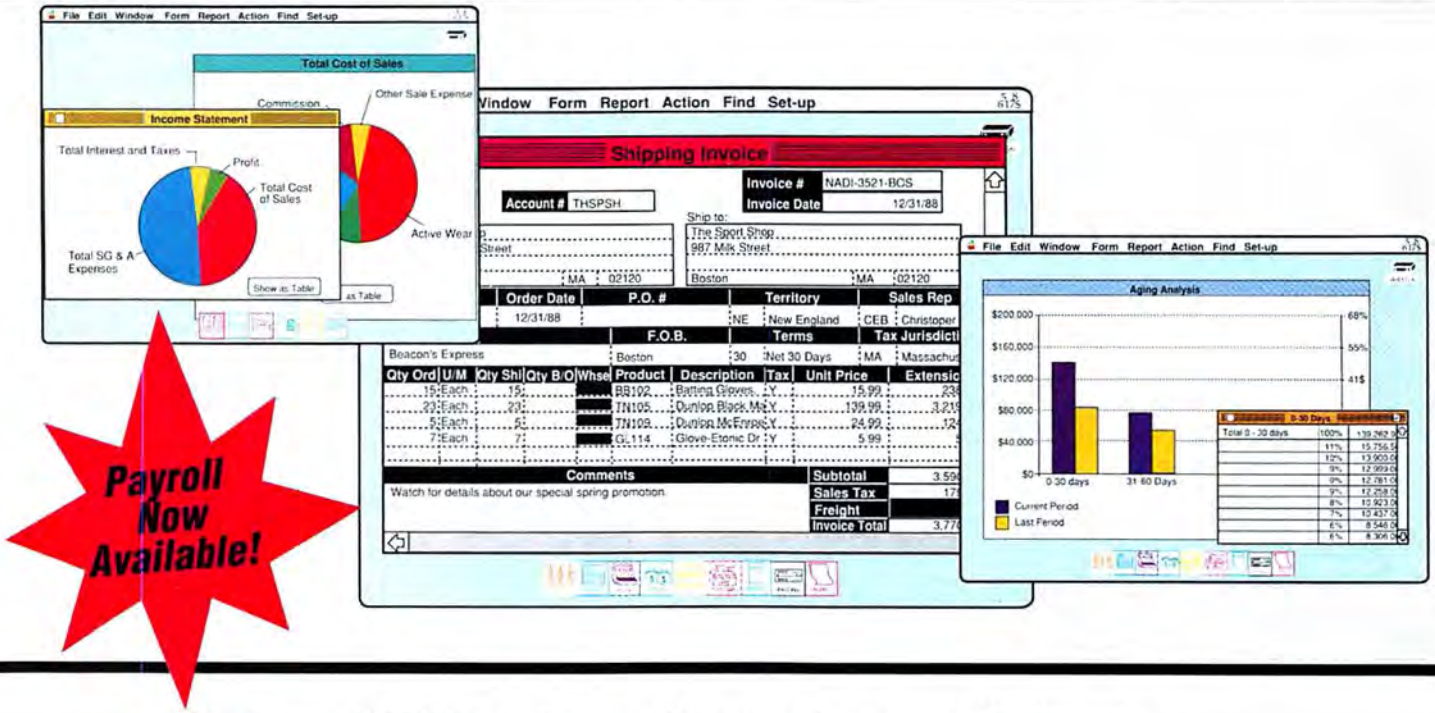


Figure 6: If the Help function in MacWrite II seems familiar, that's because it's based on HyperCard. You can open the MacWrite II Help file in HyperCard and modify it. For example, you can add cards demonstrating special style rules for different components of a publication, and these cards can be linked to new buttons on the Table of Contents card of the Help file.

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TIP SHEET

meltdowns, and/or Godzilla.

The SimCity newsletter, sent to registered users, suggests that you always save your city in December, which loses the city only one month's worth of tax revenue. But if you want to avoid any loss of funds, call up the Budget window immediately after you restart a saved city and enter the tax rate.

Bruce Schmidt
Rio del Mar, CA

Word 4.0

Ordinary screen savers may dim your screen or offer fireworks and clock displays, but in Word 4.0, there's an animated display that is quite beautiful in color (see Figure 7). Select Commands from the Edit menu and choose Screen Test from the list of commands in the dialog box. Click on the Do button. If you click once while the images are dancing across the screen, a dialog box will let you customize the display or cancel it.

Robert Roosevelt
New York, NY

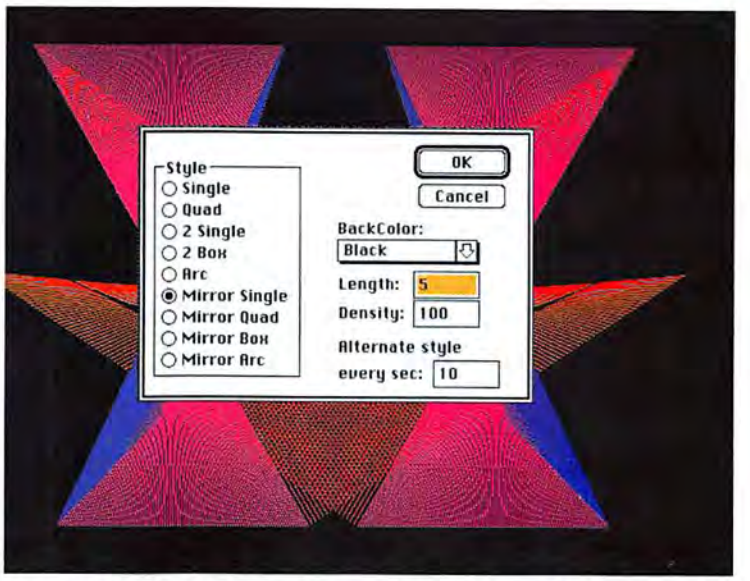


Figure 7: If Pyro! and other screen savers aren't enough for you, try the one in Word 4.0. You can even edit it — clicking the mouse anywhere when the screen saver is active brings up this dialog box, through which you can change the display.

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TIP SHEET

7 WAYS TO

QuickMail Power

CE Software's QuickMail 2.0, on its way to becoming the most popular electronic-mail program for the Macintosh, is an efficient system — especially if you use some of these hints.

1. Tired of scrolling through a long directory every time you want to send a message to the person at the bottom of the list? An easy way to force names to the top of the list is to use QuickMail's Group command to create a group for the person (yes, a group can have just one member). Groups always appear at the top of the directory list.
2. Want to know if someone read your message but don't want to be interrupted by a return receipt? Select Preferences from the QuickMail menu and click on Log Handling. You can then enable your Mail Log. A Log entry shows who has read each message and when.
3. Tired of sending the standard retraction "Ignore that last message — I forgot to . . ."? You can Unsend a message that hasn't yet been read by using the Mail Log (but only if you have it enabled).
4. Is QuickMail more like SnailMail for you? Here's how you can speed things up: In the Preferences dialog box, uncheck "Fill folders when opening" and disable your Mail Log (yes, we know that the last two tips told you to use the Mail Log, but there we were talking about features, and here we're talking about speed). Select and file new messages before reading them; this moves them from the server to your own hard disk, speeding up access.
5. Want to read a message you've filed on your hard disk but don't want to log in to a MailCenter? Use QM Remote. It can open text files as well as QuickMail letters you've filed.
6. Too busy to be bothered with opening your QuickMail? Often, the substance of a message can be expressed in the title, leaving intricate details for the body of the message. For example, instead of entitling a message "Meeting Reminder" and furnishing the date and time in the body of the message, you can entitle it "Meeting 10/22 1 P.M." The title then acts as an effective reminder. You get all the information you need just by looking at the QuickMail window. (However, QuickMail truncates long message titles to fit into the main QuickMail window.)
7. Wish you could attach messages to Apple's Alarm Clock DA? Use QuickMail to address a message to yourself and press the Delay button to postpone sending it until a specified date and time.

— James Finn and Salvatore Parascandolo

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Help Folder

Answers to Readers' Questions

400K + 400K ≠ 800K

Q. I lent an 800K MacPaint file disk to a friend who has a 512K Macintosh, which reads only 400K disks. By accident, he reinitialized my file disk! I'm sure that the files on the initialized 400K side are not readable, but is there any way I can recover the files on the side of the disk that was not initialized again?

Tom Lough
Simsbury, CT

A. Unfortunately not. The Macintosh doesn't treat a double-sided 800K disk as two 400K halves, as you presume. Instead, it treats it as 80 "cylinders" of information, each cylinder consisting of two tracks, one on the top side of the disk and one on the bottom. For efficiency, it fills one cylinder with data before moving on to the next, which lets it retrieve a larger amount of data without moving the disk head. So your files are most likely split across two sides of the disk. If one side has been erased, you're unlikely to be able to recover any data.

Striking JClock

Q. After purchasing my Mac SE recently, I received a copy of a clock INIT called JClock. This digital clock seemed OK at first, but I soon realized that it doesn't blank out when the screen saver Pyro! is activated or when the space is needed for a long menu title on the far right of the menu bar (where the time appears). My problem is that JClock has become invisible, and I am unable to remove it from the System Folder! It has been

It Just Grows

Q. Can you explain why 2 plus 2 does not equal 4 when you add pictures to Microsoft Word documents? If you draw a picture with Cricket Draw and paste it into a Microsoft Word document via the Clipboard, the size of the resulting file is always greater than the sum of the two previous files. Is there any way to get rid of this excess?

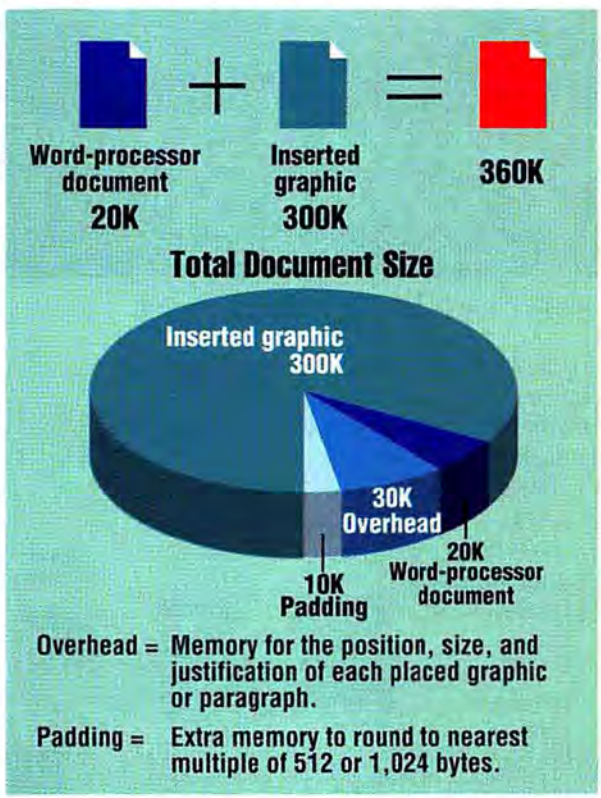
Jerrold R. Hubbard
APO, NY

A. It's usually pretty tough to figure out the relationship between a file's size and the amount of information it contains. There are a bunch of reasons for this, several of which may be contributing to your file-size confusion. Probably the most important reason is overhead. When you add text or graphics to a file, the Macintosh needs to remember information about it, such as its position, size, and justification. This additional information adds some overhead — usually a few bytes for every paragraph or picture in the document.

The second contributor is padding. For convenience, many Macintosh applications ask for more memory than they actually need, rounding up to the nearest multiple of 512 or 1,024 bytes. (Some applications round up to even higher numbers: HyperCard requests extra memory in chunks of 8K!) So in some cases, adding just a few characters of text or a small picture may seem to consume hundreds more bytes than you actually added. (A corollary is that sometimes you can add more information to a padded file without increasing its size on-disk.)

Often the effects of overhead and padding aren't noticeable because of other effects. Most importantly in terms of your question, Microsoft Word has a Fast Save feature, which lets you save files relatively quickly in exchange for greater disk-space consumption.

When the Fast Save option in the Save As dialog box is checked, Microsoft Word doesn't actually delete text or graphics that you remove from a document; it just skips over them when you're displaying, editing, or printing the document. Thus, files don't get smaller when you delete things from them, and there is more overhead when you add new information. When you choose Save As and uncheck the Fast Save check box, Microsoft Word actually erases all the deleted information, so the file size should decrease.



By Chris Espinosa



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suggested that I remove everything from the System Folder and start over, and that it is possible to do so without losing any data. Because I'm a novice, this idea makes me very nervous. Is this the only way to remove JClock from the System, or is something available to help a rookie find it?

Greg McNeil
Columbia, MO

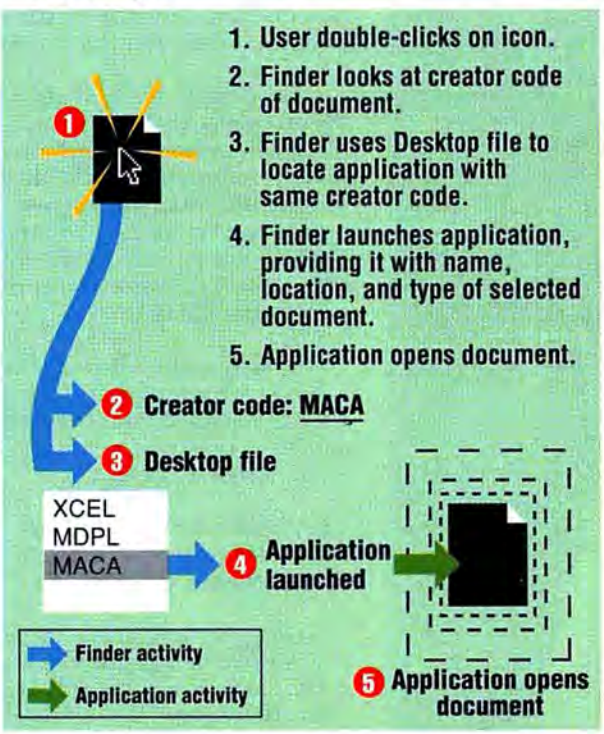
A. JClock is useful but somewhat insidious. Luckily, there's a utility called REMOVE*JCLOCK, written by Jay Riley of DataMagik, P.O. Box 555, Berkeley, CA 94701. It's distributed by BMUG and other user groups and is also on BMUG's PD ROM Volume 1, a Macintosh CD-ROM disc full of publicly distributable software. Contact BMUG at 1442A Walnut St., #62, Berkeley, CA 94709; (415) 549-2684. And if you want a more flexible menu clock that can cope with screen savers, color, MultiFinder, hidden menu bars in HyperCard, and other innovations of the modern Mac environment, try the free program SuperClock! by Steve Christensen. It even has an alarm clock, countdown timer, and hourly chime. SuperClock! is available from user groups.

Fooling Freditor

Q. I'm an engineer who programs in FORTRAN on my Mac II (yes, I feel lonely). I use Absoft MacFortran to produce various applications and, until recently, Edit (supplied with MacFortran) to edit source code and examine the output files of my applications. When I double-click on an output file, the system automatically knows that Edit is the appropriate application.

Recently I purchased a new editor from Tech Alliance called Freditor. I would like to fool the system into selecting Freditor instead of Edit when I double-click on a file that has been created by one of my applications. I have tried using ResEdit to change the appearance of Freditor so that it looks like Edit, but I haven't been successful yet. Is there a way to do this?

Jack Murphy
Winchester, OR



A. If you were trying to fool the Finder by changing Freditor's icon to resemble Edit's, it was a valiant try — but the Finder doesn't go by looks when picking an application to launch when you double-click on a document file. It goes by the Finder information that's stored in the file directory on the disk.

Two special entries in the Finder information identify the type and creator of each file. The Finder uses the creator information to launch an application when you double-click on the file. It knows which application to launch by looking up the creator information in the Desktop file, a hidden file that's maintained by the Finder on each floppy or hard disk.

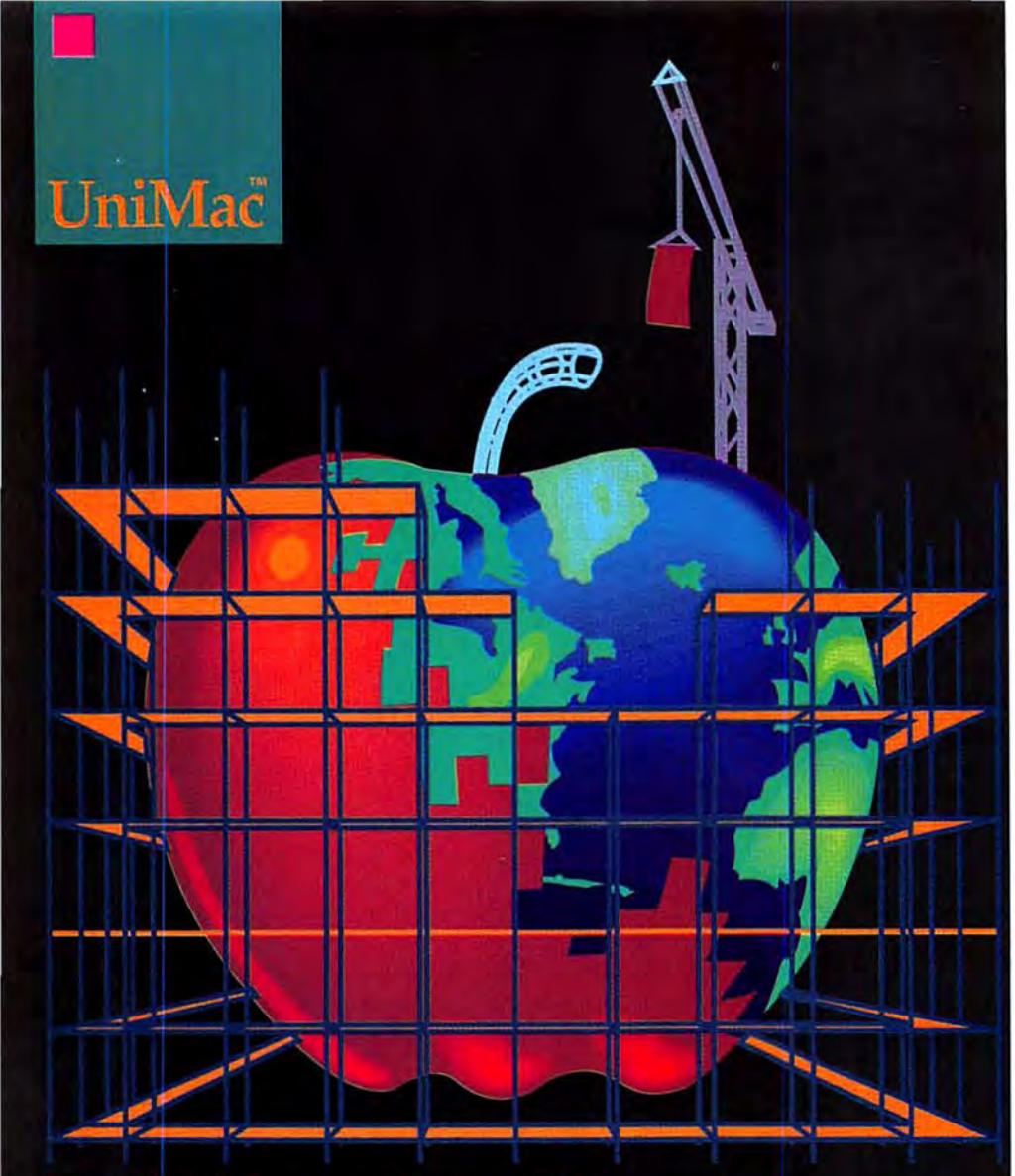
To launch Freditor when you double-click on your output file, you can do one of two things: change Freditor's creator information to be the same as Edit's or change your files' creator information to be the same as Freditor's. The first method requires less work but means that all your Edit files are opened by Freditor.

To change the Finder information for Freditor, use any low-level disk utility such as FEdit Plus, SUM, or DiskTop. These (and many others) have facilities for inspecting and altering the Finder information (sometimes called file Finder attributes) for a file. First, open Edit. You'll find that its type is APPL (meaning it's an application) and its creator is EDIT. Now open up Freditor's file. Change its creator to EDIT. Return to the Finder and remove Edit from your hard disk.

Now you have to tell the Finder to update its Desktop file. The easiest way is to copy your altered Freditor to a floppy disk, drag the original to the trash and empty it, and then drag the floppy copy back to the hard disk.

You'll see Freditor's icon gyrate wildly during this process, from its own icon to the generic application icon to Edit's icon.

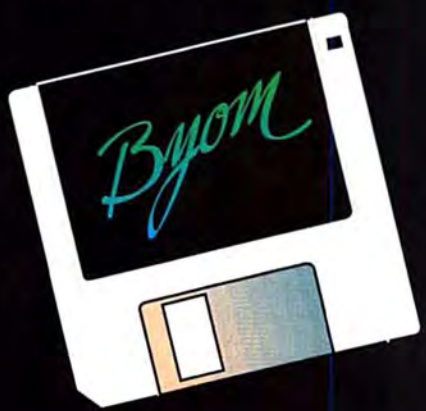
But the preferred way to do what you want is to make your FORTRAN program set the type and creator of your files when it creates them. Your development system should include interfaces to the SetFInfo and GetFInfo calls to the Macintosh File Manager, which allows you to set the file and creator information of each file your program creates (see *Inside Macintosh, Volume IV*). Set the type to TEXT and change the creator to match Freditor's creator type (FREd). Then each time you double-click on one of your files, you'll automatically launch your preferred Freditor rather than Edit.



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A Greek Sort

Q. I recently completed work on a bilingual medical glossary in English and Greek. The initial compilation was done in FileMaker Plus, and the final page management and printing were done in Word 3.0. I used the SuperGreek font to create the Greek text. Word's sort facility was fine for doing a final check of word order for the English/Greek entries, but naturally it could not handle the Greek alphabet; any attempts to sort Greek produced a 60-percent-correct sort based on the normal A-to-Z logic of the Latin alphabet and the equivalents of the Greek letters. The final sort had to be done manually, which was time-consuming. Is there a way to modify Word so it can recognize a new alphabetical order?

Also, is there any way to modify Word so it will write from right to left and thus make it possible to use alphabets that use that convention, such as Hebrew or Arabic?

Paul D. Hellander
Ioannina, Greece

A. The problem here is not in Word — and the solution is within the Macintosh. The Mac Toolbox supplies many "local language" functions that permit an application to find out the local currency symbol, spellings of months and days, the date and time conventions, and also the full ordering of characters in the local language (which isn't a problem with only non-Roman scripts: Germans, for example, really want *Sprößling* to come between *Sprosse* and *Sprotte*, where a traditional character-value ordering would probably place it right before *Spucke*). Applications that use the Toolbox for these functions can adapt to whichever conventions you choose to use, without modification. The system software determines which language the Macintosh uses; dealers and resellers in each country ship Macintoshes with system software for that particular country, and complete sets of all language versions of the system software are available from APDA, at (800) 282-2732.

System software is available in Hebrew and Arabic versions, and basic text-editing routines are modified to allow right-to-left character entry in many circumstances. Although a text-intensive application such as a word processor won't be able to use it automatically, you can enter short texts into a "scratch pad" document and copy and paste them into other applications.

Unfortunately, transferring SuperGreek documents to Apple's "real" Greek system will probably involve reentering all of the text or spending a lot of time doing conversions from SuperGreek's character ordering to that of the Macintosh Greek, because SuperGreek is intended to work with the English version of the System.

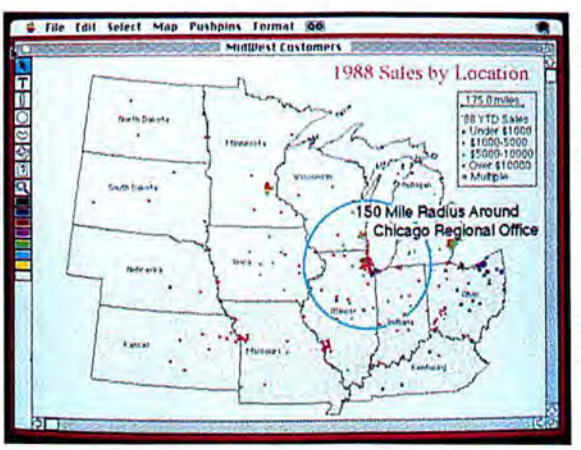
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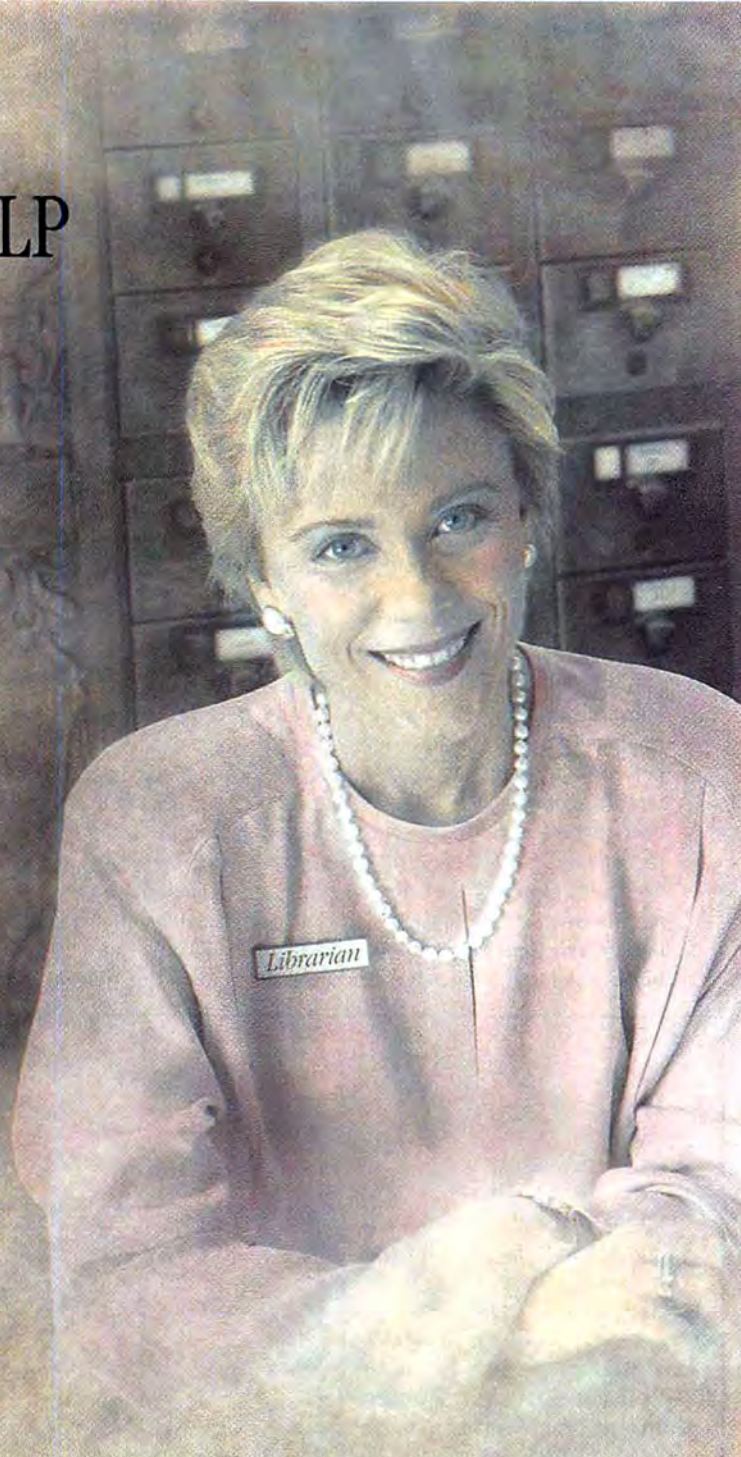
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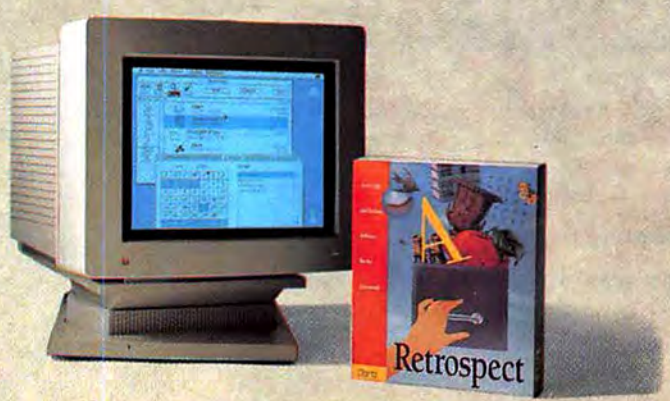
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Hurry Up and Wait

Q. Three times now, in well less than a year, since shelling out my hard-earned money on what I thought was the "best computer on the market," Apple has brought out improved Macs, with the most recent, the Macintosh IIcx, now predicting the death of my new, hardly used, and now overpriced Macintosh II. Will aftermarket upgrades help ease some of the pain, or would it be better to bite the bullet by selling my Mac II now and buying the newer Mac IIcx, knowing full well that Apple will do it to me again sooner if not later?

Roger J. Billman
Dayton, OH

A. First, I guarantee that Apple will indeed "do it to you again." The state of the art is a moving target, and there are always a few new CPUs on the drawing board to deliver what users say they want: more speed, lower price, lighter weight, more expandability. This is common in the personal-computer business; Apple isn't unique. As the rate of introductions increases, buying a computer is becoming more and more like buying a new car in August: You know there's going to be a new model out soon, and it'll probably be niftier. What do you do? Buy or wait?

The important thing to remember about the Macintosh is that no Mac is obsolete just because there's suddenly something better. Even though the Mac Plus was introduced in 1986, it can still run all the old software and a whole lot of new stuff. Even without upgrading, a computer can give you years of service long after it's been superseded by newer, faster, cheaper ones.

So don't feel that your Mac II has suddenly become slower and costlier just because the Mac IIcx exists. That's a good way to drive yourself broke and crazy at the same time. If you really need the fastest, look into some of the 68030 speedup kits: the 32-MHz MaraThon 030 accelerator ($1,599 from Dove, 1200 N. 23rd St., Wilmington, NC 28405; (800) 622-7627 or (919) 763-7918 in North Carolina) or the 33-MHz 68030 accelerator ($5,995 from Daystar Digital, 5556 Atlanta Highway, Flowery Branch, GA 30542; (404) 967-2077).

But if you really want to trade up, there's probably a good use around the shop for your "old" Macintosh II. Use it as a file server or a print server. Let somebody else in your family or business use it. Sell it to somebody who'd be more than happy with a "mere" Mac II. You'll be running the same applications as the person who inherits your II, and they'll have spent a lot less money — but you'll have speed and a state-of-the-art (for now) machine.



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DTP

This month's Fine Print provides pointers to help you pick the proper printer for your publication. The choice is more complicated than simply selecting the highest resolution you can afford — sometimes less is better. At *MacUser*, we use screen shots to show you the nuts and bolts of software. But screen shots can serve other purposes, too, ranging from creating instant clip art to capturing help information. "Shooting Gallery" highlights the alternatives (many of them are free) to Command-Shift-3.

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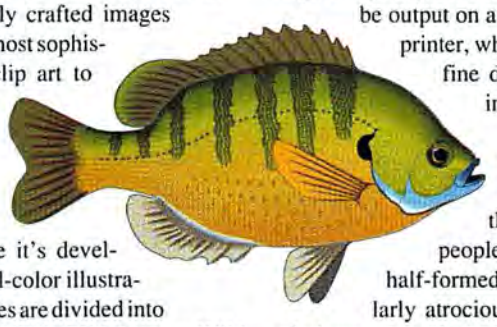
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Classy Clip Art

EPSF clip art has finally gone over the rainbow, into the land of 32-bit color. Totem Graphics has released the first full-fledged collection of color PostScript clip art, and it's a winner. You're sure to find something to meet your needs, whether it's for a full-color advertisement or a black-and-white newsletter.



These finely crafted images are easily the most sophisticated Mac clip art to date. Each piece is hand-drawn in detail and scanned into a Mac II, where it's developed into a full-color illustration. The images are divided into 12 categories: Birds, Fish, Insects, Wild Animals, Domestic Animals, Flowers, Food, Holidays, Nautical, Sports, Tools & Hardware, and Women. The animals and plants are superb, and the images range from the mundane (eagles, horses, and carnations) to the extraordinary (lionfish, peacock butterfly, and dinosaurs).



The clip art is available in four formats: Illustrator 1.1, Illustrator 88, FreeHand, and EPSF. If you have Illustrator or FreeHand, you can tweak the images to your heart's content. You can change the colors, alter details, or simply rotate, shear, scale, or crop the images. Be careful, though — the images are already so complex that you may overload the printer. However, you might want to remove fine details to improve image clarity at small sizes.



FreeHand does not display some intermediate blending shades properly, so don't trust the colors as they appear on your monitor. Of course, this isn't a problem if you don't have the recommended Mac II and color monitor. However, the images look fine on a monochrome screen and will print in full color.



The finished images can be output to any PostScript printer, including LaserWriters and Linotronics. You can send them to a color printer or convert the images into color separations for high-end print jobs. The artwork can also be output on a black-and-white printer, where it prints with fine details and shading intact.

Unfortunately, some drawings (mainly those of food and people) look flat and half-formed. Two particularly atrocious depictions are of George Washington and of a female construction worker. And, except for the latter image, most women are shown in stereotypical roles, such as nurse, cook, and waitress. There are also models, nudes, and the requisite image of Marilyn Monroe. Totem Graphics plans to include more professional women, such as a doctor and a lawyer, in future releases. Interestingly, there is no "men" category, and most male images appear in the Sports category (natch).



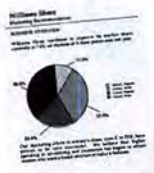
Totem has released six volumes, with six more planned for release by the end of the year. Each volume contains 96 images, 8 from each of the 12 categories, plus a full-color pictorial catalog. The volumes are $95 each, or $895 for the complete set. That's about 78 cents per image — a real bargain for artwork of this quality. For further information, contact Totem Graphics at 5109-A Capitol Blvd., Tumwater, WA 98501; (206) 352-1851.

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DTP

Matching your publication with the proper printer can make the difference between great-looking results and yesterday's news.

The Right Resolution

At last, your first major DTP project is ready for the printer. Because you want it to look as good as possible, you take it to a service bureau and have the master pages output on a Linotronic at 1,270 dots per inch (dpi) — maybe 2,540 dpi if you can scrape up the extra cash. That *is* the only way to get professional-looking results, right?

It ain't necessarily so. Today's DTP shop offers many different resolutions for your publication, from the familiar 300-dpi laser printer to high-resolution imagesetters such as the Linotronic 300. Which one you should choose depends on everything from the typeface you're using to whether you need to produce halftones. After analyzing the nature of your job, you may discover that you don't need more than 600, or even 300, dpi. If you're working with a limited budget, you can even plan your job to look its best at less-expensive resolutions.

If your job is going to be photocopied rather than printed traditionally, there's no point in printing the master pages at a resolution greater than 600 dpi, because the photocopy machine will blur fine typesetting details. But even if you're producing your publication on a printing press, sometimes you must opt for the less-expensive route. That doesn't mean your job has to *look* cheap, though. Some typefaces — such as Helvetica, Avant Garde, Palatino, and Lubalin — reproduce well at 300 dpi. However, typefaces with tiny serifs or very thin lines (such as Garamond and Optima) lose much of their original appearance at low resolutions, as do many complex graphics.

Many low-budget jobs use soft paper stock, such as 20-pound copier paper. If that's your situation, expect the paper to absorb ink like a sponge because the stock is porous. Don't choose fonts with details that will be lost during the printing process. On the positive side, soft stock will smooth the ragged edges of low-resolution output.

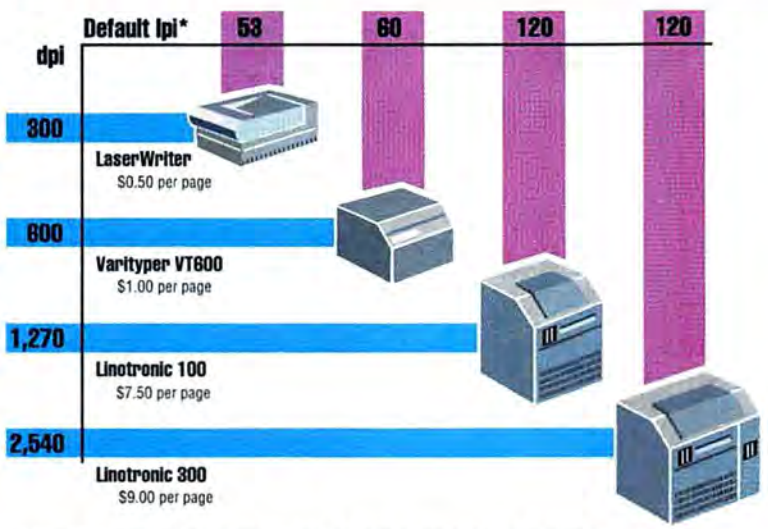
Some jobs might actually be too complex to print at high resolutions. Let's say you've created a complicated PostScript graphic, using FreeHand or Illustrator. A suitably equipped PostScript printer shouldn't have much trouble reproducing this image at 300 dpi. But at 1,270 dpi, an imagesetter can easily run out of memory. Although newer printers handle these problems better than older ones, you run the risk of memory overload on any high-resolution printer if your design is too complicated. The worst part is that you don't know if the art is too complex to print until you try.

Another important consideration is whether your job includes gray-scale images such as scanned photographs. Gray levels are more difficult to reproduce than black-and-white text because a printer has only black ink. Photographs must be converted to halftones — images that use dot patterns to simulate gray tones. The dot patterns are created by grouping printer dots into clusters, or cells, which significantly reduces the resolution available for the print job.

On a 300-dpi laser printer, you can't have both high resolution and continuous gray tones. For a halftone screen of 75

Today's DTP shop offers a choice of resolutions for a publication.

Comparing Printer Resolutions



* Some programs use other default settings; users can specify higher or lower resolutions.

By Carl Haeberle and Sal Glynn

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lines (of dots) per inch, the LaserWriter provides only 33 gray levels. The Linotronic, however, offers the luxury of both high resolution and realistic gray tones. The "Comparing Printer Resolutions" table shows the default halftone settings for printers of various resolutions. (For a discussion of halftone reproduction, see "A Touch of Gray," February '89.)

Lines per inch is the standard printing term for the resolution of halftone images. Newspaper halftones are printed at 65 to 85 lpi. *MacUser*'s photographs are printed at 133 lpi. Some magazines that emphasize graphics, such as *Life*, go as high as 180 lpi.

A 300-dpi printer can't provide high resolution and quality halftones.

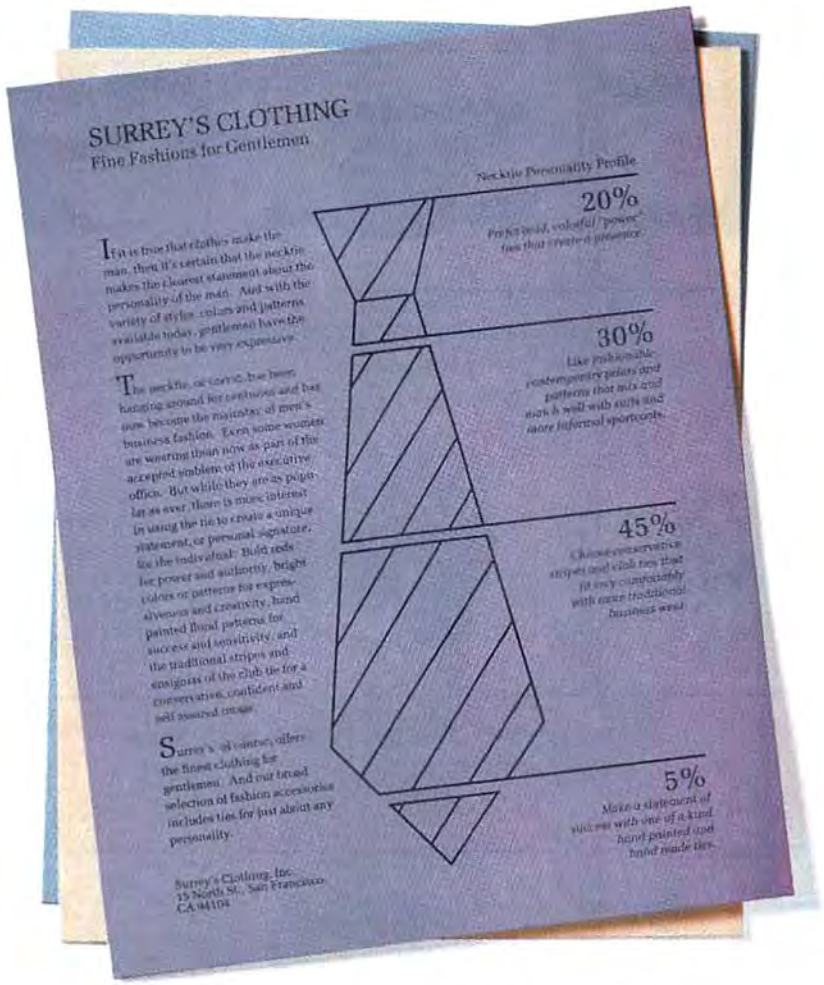
If you're not sure how your work will be used, don't use more than 100 lpi for halftones. If you're providing camera-ready pages for a publication, find out beforehand what the resolution requirements are. If the publication can handle 130 lpi and you turn in 65-lpi work, the results will appear at 65 lpi. Expensive, coated paper will magnify the limitations of 65-lpi output. Conversely, if the printing press can handle only 65 lpi and your halftones are screened at 130 lpi, the gray areas will look muddy.

Here are two final tips. Save examples of output from previous jobs so you'll know what to expect. And always try to get jobs to the service bureau at least two days before your deadline. That way, if things don't turn out right, you still have time to rebuild and reprint.

Remember, more dots aren't always better. Quality and economy can go hand in hand if you appreciate the special needs of each job.

Carl Haeberle runs The Mac Studio, a graphic-design shop in San Francisco. Sal Glynn works at Ten Speed Press in Berkeley, California.

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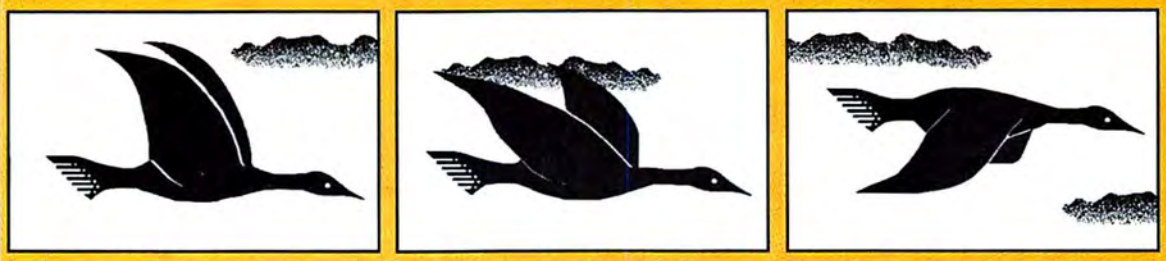
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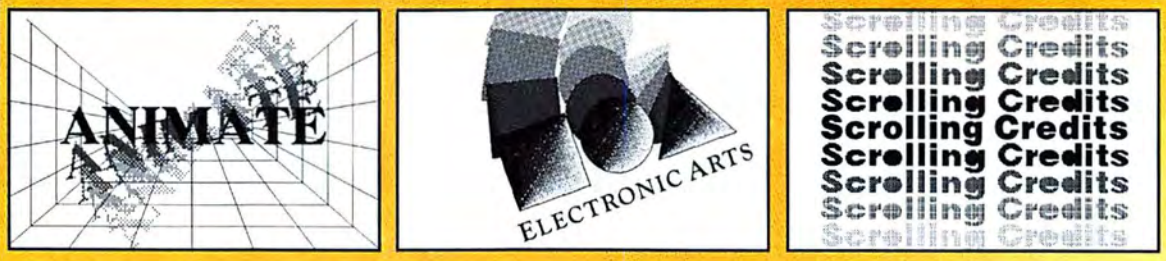
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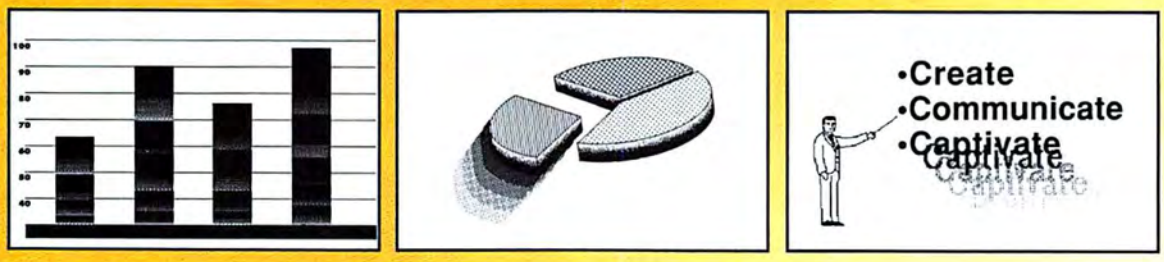
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Shooting Gallery

Whether you're snagging screens for a training manual or helping yourself to some free clip art, you've got plenty of options for capturing screen shots — and some of the best are free.



Stop everything!

Want a cheap and easy way to add some graphic punch to your memos or newsletters? It takes about 15 seconds to copy and paste this arresting icon — and it doesn't cost a cent. Here's how:

Display a warning dialog box that contains the icon, such as the dialog box that appears when you choose Set Startup for a locked disk. Press Command-Shift-3, which stores the current screen as a MacPaint document named Screen0. Close the dialog box and open the file in MacPaint. Copy the icon to the Clipboard. Open your word processor, create a new file, and paste in the icon.

That's the beauty of screen shots: They're fast and easy. Without the Mac's built-in ability to take screen shots (also called snapshots or screen dumps), you'd have to rummage around with ResEdit in a copy of the System file to obtain this icon.

The Command-Shift-3 combination (technically called an Fkey) is wonderfully convenient, but it's underused by many Mac enthusiasts. Besides snatching clip art from dialog boxes, it can create screen shots for many other uses:

- Illustrating user manuals.
- Converting on-screen PICT images to bit-mapped paint files.
- Archiving a screen in the middle of an on-line session.
- Shooting the side-by-side page preview in Word to generate thumbnails.
- Saving copies of complicated rulers or tab settings.
- Capturing frequently needed on-line help screens.
- Recording yard-long font menus.
- Creating special effects by shooting an object in FatBits mode.
- Capturing one document view to use as a reference when another document is open. (This technique helps compensate for the limitations of single-document applications.)

The Mac has evolved, but unfortunately Apple's original screen-shot utility has not. The Command-Shift-3 combo has several limitations:

- It can't capture a pulled-down or popped-up menu. (The shot is taken only after you release the mouse button — but by then the menu has disappeared.)
- It doesn't work with large-screen monitors.
- It can't capture color images.
- You can take only ten shots before you must start renaming the files.
- Screen shots are saved only in MacPaint format.

Happily, there are plenty of alternative screen-shot programs, and most are either inexpensive or free. Here's a quick rundown of the alternatives and their features. Unless otherwise stated, all the public-domain (freeware) and shareware programs listed here are available through bulletin-board or on-line services. On CompuServe, check MAUG's Personal Productivity Forum (MACPRO), in the DAs/FKEYs/INITs library.



Camera

In 1985, Keith Esau created Camera, a public-domain DA that lets you capture a pulled-down menu. You simply set a timer (in seconds), which delays the picture taking. After the allotted time, the shot is taken — even if you're pulling down a menu. It also lets you hide the cursor (see Figure 1). Camera is widely used, but it doesn't work with color or large monitors, and it has an annoying habit of placing screen shots in the System Folder.



MenuPicture

Douglas Wyatt solved the pulled-down-menu problem differently. He created an INIT file to patch the ROM code that prevents pictures from being taken while you're pressing the mouse button. Simply drag the MenuPicture file into the System Folder and reboot the Mac. After that, Command-Shift-3 works even while you're pulling down a menu. MenuPicture is freeware.



FKEY3

Another venerable substitute for Command-Shift-3 comes from Steve Maller. FKEY3 is an Fkey resource that you install in the System file (you can use ResEdit or any Fkey installer). Once you've installed it, you take screen shots by pressing Command-Shift-6. FKEY3 names the resulting files Screen A through Screen Z (giving you up to 26 shots, instead of 10). It centers the picture

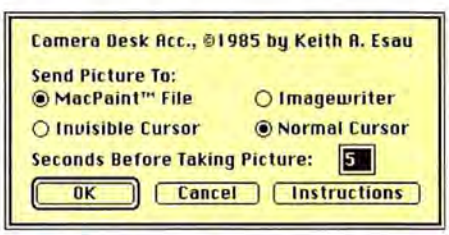


Figure 1: The Camera DA has been around a while, but it's still the only screen-shot utility that provides a time delay and lets you optionally hide or show the cursor.

By Dave Valiulis

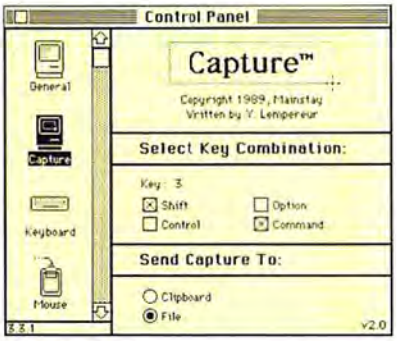


Figure 2: Convenience is Capture's strong suit. It's the only screen-shot utility that lets you select the exact area to capture. Because version 2.0 is a cdev, you use the Control Panel to set the key combination that triggers it.

in the MacPaint file, and it adds a border around the menu bar (just like the screen shots in any Apple manual). Like Camera, FKEY3 is freeware, and it doesn't work with color or large-screen monitors. It also can't snap shots of pulled-down menus (unless MenuPicture is also installed).

Capture

Capture 2.0 is a new version of one of the earliest Mac shareware programs, although now it's a commercial screen-shot utility (Mainstay sells it for $79.95). Capture's claim to fame is that it works with any Macintosh in any situation. When you activate Capture, the cursor turns into a cross hair so you can drag out a selection rectangle that encloses the exact area to be saved (see Figure 2). Files are saved in PICT format — either in the Clipboard or as standalone files. You can capture pulled-down or popped-up menus, and it works with big-screen and color monitors. Version 2.0 is a cdev that lets users choose their keystroke combination. It's also compatible with 32-bit QuickDraw.

One word of warning: Capture 2.0 might not always coexist peacefully with your other cdevs and INITs. If you have problems (the simultaneous presence of Tempo II and Capture 2.0 caused my system to crash), try varying the order in which programs are loaded into memory at startup. Forcing Capture 2.0 to load last (by renaming it zCapture) solved my Tempo II conflict.

SnapShot

The King of the Screen-Shot Programmers is Mike Whittingham of Mark 3 Software. His first program, Screen Dump II ($12), was really three separate Fkey utilities: one for making black-and-white MacPaint screen shots, another for taking color screen shots, and a nifty utility for sending the contents of the screen directly to a LaserWriter (superseding Apple's Command-Shift-4 keystroke combination, which works only with ImageWriters).

Whittingham outdid himself with his next entry, a shareware program called SnapShot ($15). It has an on-line manual, an installer program, and just about every

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conceivable option. The black-and-white version saves screens in eight file formats, shoots pulled-down menus, works fine with large screens, and lets you determine the output filename. The black-and-white version works on a color screen too, but it converts the image to black-and-white. To preserve color screens, you need the color version, which is called (surprise) Color SnapShot ($12). About the only thing SnapShot can't handle is a pop-up menu.

The industrious Whittingham is now working on a full-featured commercial screen-shot utility called Exposure. This INIT packs more features than all the current utilities combined. It also breaks new ground by including MacPaint-like tools for editing a screen before you take a shot. Exposure is being marketed by Preferred Publishers and should be available as you read this.

A limited-use demo of SnapShot is available on CompuServe in MAUG's Personal Productivity Forum. You can find a demo of Color SnapShot on MAUG's Arts & Entertainment Forum (MACFUN) in the Mac II Art/Music library.



ColorCam

Electronic Arts offers ColorCam, a color-screen–capture utility that comes with its Studio/8 paint package ($495). ColorCam has its own installer, which lets you select any Command-Shift-number keystroke combination. Pressing that combination saves the screen as a PICT2 file (see Figure 3). If you also press Caps Lock, the program shoots just the contents of the active window. ColorCam works only on a Mac II and can't shoot pulled-down menus (unless you've also installed MenuPicture).

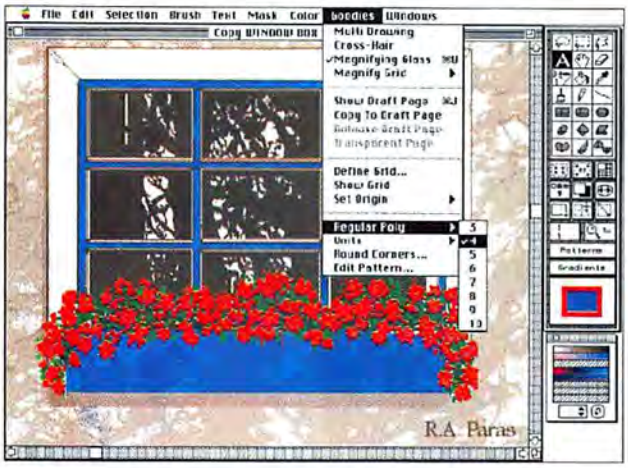


Figure 3: ColorCam captures the contents of either the active window or the whole window — in full color. If you have the MenuPicture INIT installed, it can also capture menus, as shown here. Note that ColorCam automatically hides the cursor, an undesirable habit when shooting menus. This shot came from Studio/8, the $495 paint program that includes ColorCam.

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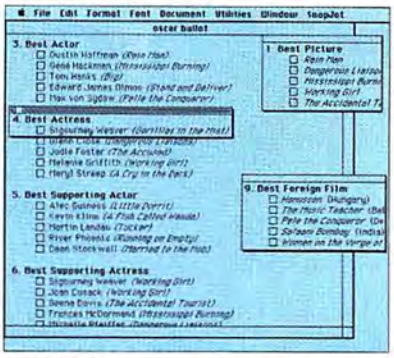


Figure 4: SnapJot is handier as an on-screen note taker or floating Scrapbook than as a true screen-shot program. You can, however, copy the bit-mapped contents of the windows to the Clipboard.

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(818) 991-6540
Capture 2.0, $79.95

Steve Maller
FKEY3, freeware

Mark 3 Software
396 Meeker Road
Vestal, NY 13850
Color SnapShot, $12
Screen Dump II, $12
SnapShot, $15

Preferred Publishers
5100 Poplar Ave., Suite 706
Memphis, TN 38137
(901) 683-3383
Exposure, $99.95

Trillium Software
21W171 Coronet Road
Lombard, IL 60148
(312) 916-9360
SnapJot, $36

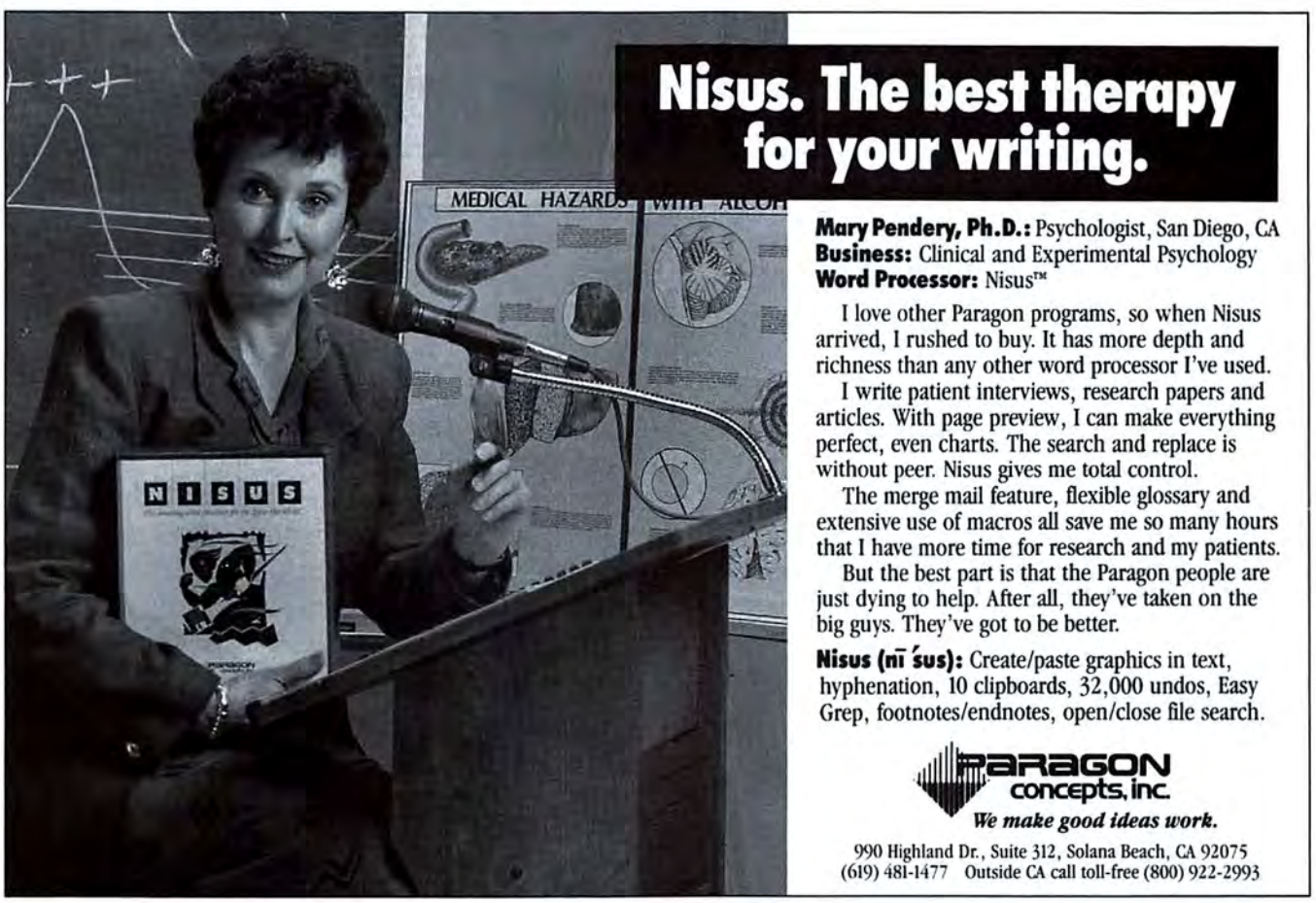
Douglas S. Wyatt
Opcode Systems
1024 Hamilton Court
Menlo Park, CA 94025
MenuPicture, freeware

Note: Shareware and freeware can be most easily obtained by downloading from CompuServe or other on-line services.

SnapJot

The most unusual screen-capture utility is marketed by Trillium Software. SnapJot ($36) is a DA that can capture any portion of your screen and put it into a special mini-window (see Figure 4). You can have any number of SnapJot windows open like on-screen Post-it notes. You can also copy the contents of SnapJot windows to the Clipboard or print them. Again, you can't capture pulled-down menus, and there are no file formats, only the Clipboard. A SnapJot demo is available on CompuServe.

Free-lance writer Dave Valiulis is so nonviolent that he deliberately misses when he shoots screens.



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BRIDGES

Frustrated by LocalTalk traffic congestion since that new bunch of users moved into the neighborhood? Been dreaming of Ethernet, only to awaken to the reality of the bottom line? FlashBox and DaynaTALK, two new products that can raise the LocalTalk speed limit, may be just what you've been looking for. Then again, they may not. Meanwhile, Trouble Shots gets down to basics and explains why timing is everything when you need to sharpen the rounded corners on your LocalTalk square waves.

WRITE TO

Bridges, c/o *MacUser*
950 Tower Lane
18th Floor
Foster City, CA 94404

EDITED BY HENRY BORTMAN

ILLUSTRATION MARK W. SWEENEY

Eau d'AppleTalk

Network General has announced complete AppleTalk Phase 2 support for its Sniffer network analyzer. The Sniffer is an indispensable tool for power network managers who want to know every last detail about their networks. It has worked with EtherTalk for about a year, and by the time you read this, it will also support TokenTalk and — hooray! — LocalTalk.

The Sniffer runs on either a Toshiba T-3200 or a Compaq 386 portable. Full system prices range from $13,500 to $25,000, depending on which network-adapter cards and software packages you choose. The network topologies it supports include 4- and 16-megabit Token Ring, Ethernet, Arcnet, and Starlan; network protocols include AppleTalk, TCP/IP, NFS, Token Ring, NetWare, XNS, Banyan Vines, ISO, and DECnet.

Network General
1945A Charleston Road
Mountain View, CA 94043
(415) 965-1800

A Server of One's Own

Information Presentation Technologies (IPT) shipped Personal Server Network (PSN) in July. PSN is a cross between AppleShare and TOPS. It's AppleShare-like in that it is fully compatible with AFP and you can access it via the AppleShare icon in the Chooser. Yet, like TOPS, it can be installed on any Macintosh workstation, where it runs in the background even under the Finder. (AppleShare requires that a dedicated Macintosh act as a server.)

With PSN installed, you can publish one or more of the volumes attached to your Mac as server volumes. You can access your disks either as regular volumes on the desktop or — by logging in to them through the Chooser — as AFP volumes.

PSN is the lowest-priced server software available for the Macintosh. It costs $149 for a 2-node license, $249 for 4 nodes, $499 for 8 nodes, and $999 for 20 nodes. Note that you have to buy PSN licenses only for nodes designated to act as servers.

IPT
23801 Calabasas Road
Suite 2008
Calabasas, CA 91302
(818) 347-7791

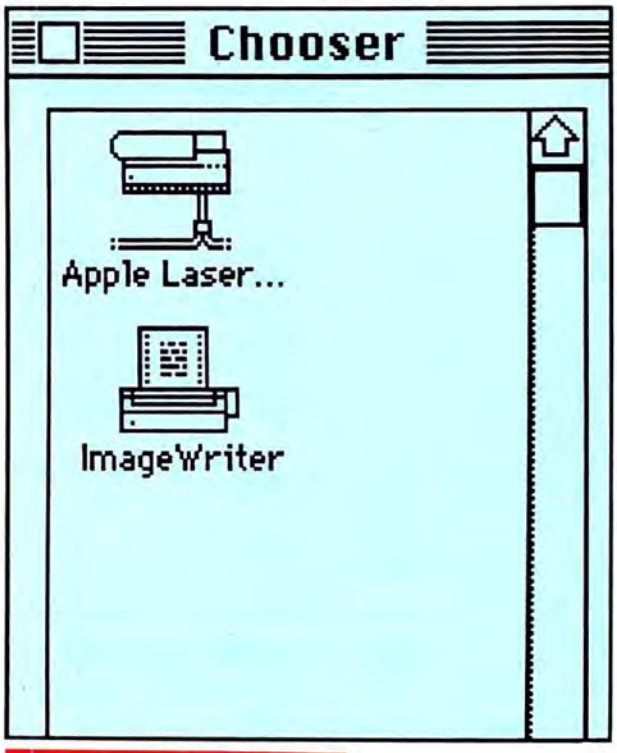
The Extended Forecast

In early July, Oracle shipped version 1.1 of Oracle for Macintosh, which expands Macintosh access to mainframe databases and provides a new application generator for HyperCard. The new version offers support for the LocalTalk-to-Ethernet DECnet gateway available from Kinetics for its FastPath 4. And Oracle's SQL*Net now works with DCA's MacIrma 3270 interface card for the Macintosh to give Macintoshes that are running Oracle access to DB2 and SQL/DS databases residing on IBM mainframe computers.

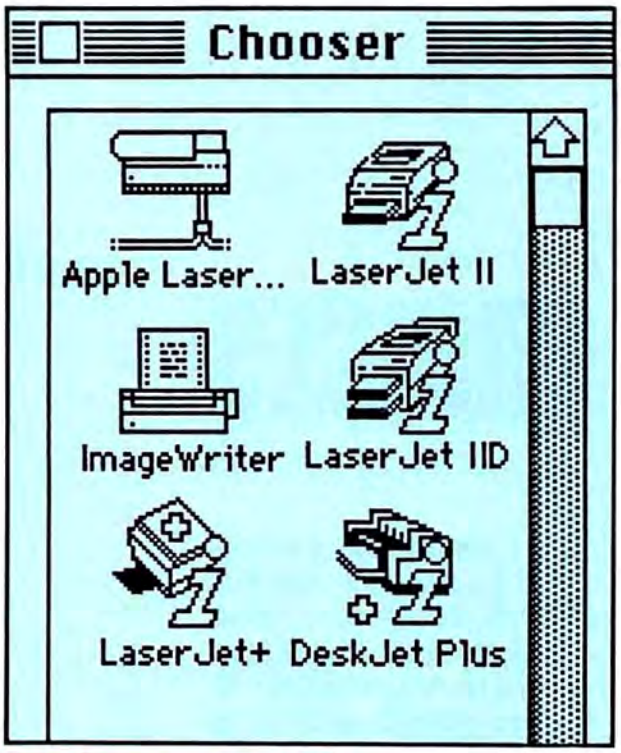


Version 1.1 also makes life easier for developers of Macintosh front ends for Oracle applications. Oracle's upgraded HyperCard Application Generator simplifies the creation of applications that use relational links between tables, and the C-language programming interface has been enhanced to support a wider range of C compilers.

Oracle Corp.
20 Davis Drive
Belmont, CA 94002
(415) 598-8000



Before MacPrint.



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MacPrint has several advantages you can easily point to.

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MacPrint is a chooser-level utility. It's exceptionally easy to use. In fact, once you choose the printer on a simple set-up screen, MacPrint is completely transparent.

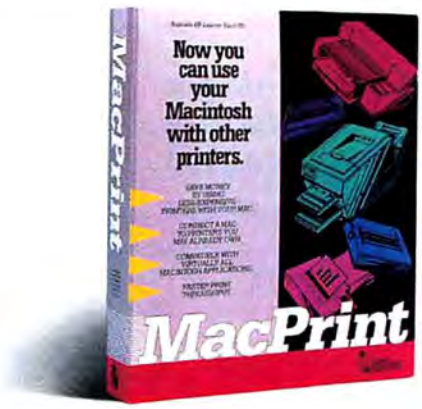
MacPrint displays all your printer's resident and cartridge fonts for true WYSIWYG performance. If it can't find a resident font, it will create one based on the QuickDraw screen font. And MacPrint lets you print at your printer's maximum resolution: 75, 150, or 300 dpi—in portrait or landscape orientation.

Here's one more advantage you can point to: MacPrint costs just $149, cable included.

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415-652-4115

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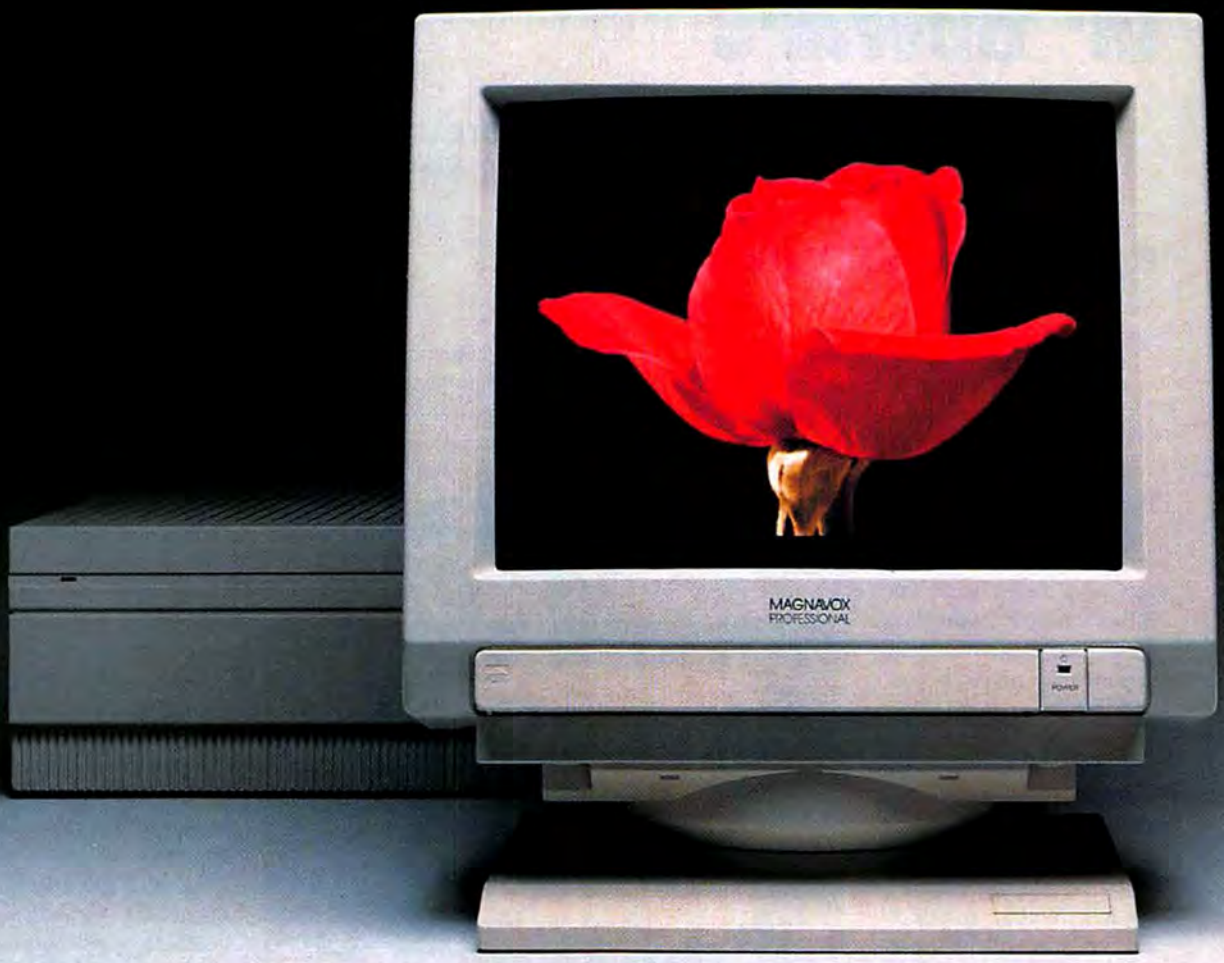
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Be Square or Beware

Discover the pitfalls a wandering square wave can face as it travels the network wire.

By Kurt VanderSluis

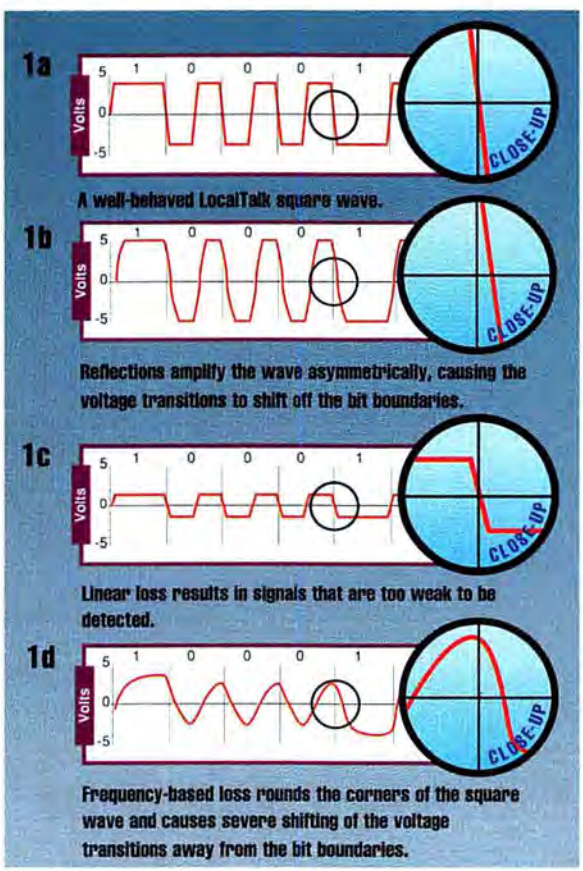
This month, we'll look at the physical characteristics of the electrical signal that travels across the wire in a LocalTalk network. The LocalTalk signal is a square wave (see Figure 1a), which periodically alternates between positive and negative voltages. The places where this occurs are called *voltage transitions*, which represent the data being transmitted across a network.

In the figures, vertical lines indicate *bit boundaries*. One bit—either a 0 or a 1—is sent or received in each time interval between bit boundaries. If there's transition in the middle of the bit, it's a 0; otherwise it's a 1. Voltage transitions must occur at each bit boundary and may happen halfway between them. If a transition occurs too early or too late, an error occurs and the data must be sent again.

In an ideal LocalTalk signal, the voltage fluctuates cleanly and rapidly between two voltage states, usually about +3.5 V and -3.5 V. The corners are square, and the voltage transitions occur exactly on or halfway between the bit boundaries. But the signal, even if generated perfectly by a computer, degrades as it travels along the wire. In previous articles, we've discussed two forms of degradation: *reflections*, which result from improperly terminated wires, and *attenuation*, or linear loss, which results from network wiring that's too long. Figure 1b shows the effect reflections have on a signal. Figure 1c displays the effect of linear loss.

A third kind of degradation, *frequency-based loss*, is a form of attenuation that occurs when a square-wave signal travels over too great a length of wire (see Figure 1d). Square waves are composed of many different frequency components. The high-frequency components are concentrated in the corners of the wave. On twisted-pair or stranded wire, higher-frequency signals attenuate faster than low-frequency signals, and the corners of the square wave become rounded, which causes the voltage transitions to shift out of sync with the bit boundaries.

A *reclocking repeater* can correct this problem. A repeater, generally speaking, is a signal pump. It has two or more LocalTalk ports, with a wire connected to each. When a repeater senses a signal on one port, it amplifies the signal and then sends it back out the other port(s). Reclocking repeaters, besides amplifying a signal, retime the voltage transitions so that they occur exactly on or halfway between the bit boundaries. The only reclocking repeater available for LocalTalk networks is Farallon's two-port PhoneNET Repeater ($495). TOPS' two-port TOPS Repeater ($189) doesn't reclock the signal.



With standard phone wire, such as that used with Farallon's PhoneNET connectors, a LocalTalk network can span up to 4,500 feet, depending on the gauge of wire you use and the configuration of your network. With either the TOPS or PhoneNET repeaters, you can double the wire length to 9,000 feet. But because the TOPS Repeater doesn't reclock signals, you can install only two in series. With PhoneNET Repeaters, you can string as many as five together, for a total network length of 27,000 feet. (We haven't yet verified these vendors' figures with NetWorkShop tests.)

A router can also regenerate a LocalTalk signal, but this is not its primary purpose. Routers introduce delay into a network. Using a router where you really need a repeater may clean up your signal but slow down your network!

ILLUSTRATION: MARK W. SWEENEY

Announcing TextPert™ 3.0

Before, TextPert was the most intelligent OCR purchase you could make. Now, TextPert 3.0 is the only *Intelligent Page Recognition* purchase you *should* make. Here's six great reasons why:



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3 Automatic Page Analysis

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4 More Than 30 Languages

TextPert can read more than 30 languages and 4 different alphabets. The manual and program are available in English, French, Spanish, Italian, German, and Swedish.

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For professionals, a complete set of tools for special reading needs are included, such as table processing for financial reports, template creation for processing standard forms, special tag or character insertion for interfacing with databases or professional printing systems, and processing of inverted text encountered in company brochures.

6 Minimum Startup Cost

TextPert requires only 1 megabyte of memory (and 2 megabytes of free disk space), a Macintosh II, SE, or Plus, and any Macintosh compatible scanner.

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Breaking the Speed Limit

LocalTalk too slow? Ethernet too expensive? Consider 'enhanced' LocalTalk.

By Stephan Somogyi

MacUser NETWORKSHOP

LocalTalk, the network circuitry built into each Mac and every LaserWriter except the SC, is the primary reason that Macs and networks work together so well. No extra cards to buy, only a few connectors and cables. Plug and play.

There's a problem, though: LocalTalk is slow. Although 230,400 bits may sound like a lot to send over a wire in one second, when you consider that everyone on your network has to share 230.4 kilobits per second (Kbps), the truth emerges.

Apple introduced LocalTalk originally to enable small groups of people to share LaserWriters. It was never designed for medium-to-large networks. Although it has held up well, the increased popularity of scanned images, color graphics, and sound has created an acute need for more bandwidth.

Ethernet is one obvious solution, and Apple now supports it along with LocalTalk. But the cost and effort involved in switching to Ethernet — $500 per node, not counting wiring — is prohibitive for many users. Enter "enhanced" LocalTalk at less than $200 per node.

Two companies, Sun Microsystems' TOPS Division and Dayna Communications, offer enhanced-LocalTalk products with data-transfer rates that are more than three times that of standard LocalTalk. Dayna's product is DaynaTALK; TOPS' goes by the name FlashBox. (*Enhanced LocalTalk* is not a product name; it's our generic term for FlashBox- and DaynaTALK-type devices.)

Getting It On

Installing both products is straightforward. You plug them in between your Mac's printer port and the network connector and then install the software. TOPS' FlashBox has three plugs: one for the network connector, one for the connector to the computer (supplied), and the third for the external power supply (also supplied). The software has its own installer. The DaynaTALK box has only a single plug, for the network connector. The cable that plugs into the Mac's printer port is molded into the box, and DaynaTALK doesn't require external power.

The software for both products is accessible through the Control Panel. To enable FlashTalk (FlashBox's protocol), select its icon in the Network cdev. FlashTalk operates at a single speed of 768 Kbps. For DaynaTALK, you click on the DaynaTALK icon and get a dialog box, from which you can turn on SpeedGuard Timing (more on this later) and select the speeds you want to use. DaynaTALK works at three speeds: 600, 740, and 850 Kbps. Plus, it supports FlashTalk's 768 Kbps. Dayna recommends 850 Kbps. However, SEs built before mid-1988 and Mac Pluses cannot transmit at 850 Kbps; they must use 740 Kbps. The 600-Kbps speed is for marginal networks (the kind we warn you against in Trouble Shots).

Don't treat that last statement casually. Whether you consider it a strength or a weakness, standard LocalTalk is very forgiving of poorly wired networks, and there are lots of them. Enhanced LocalTalk is much less tolerant. If your wiring is a rat's nest of passive stars or closed loops, there's a good chance you'll have to rewire before you can succeed with either FlashBox or DaynaTALK.

Using enhanced LocalTalk also cuts the total permissible length of your network to one-third of the previously allowed length and the maximum number of nodes to three-quarters. So, for example, if you have a backbone PhoneNET network with a wire limit of 1,800 feet and node limit of 48, installing enhanced LocalTalk will reduce your allowances to 600 feet and 36 nodes.

The Technology

Data is transmitted across a network in units called *packets*, which contain a maximum of about 600 bytes each. A packet consists of three parts: a header (which contains such things as the network addresses of the sending and receiving nodes), the actual user data being transferred (for example, a segment of a file or an E-mail message), and a trailer (which contains more network-protocol information). With standard LocalTalk, these three parts are all transmitted at 230.4 Kbps. With FlashTalk and DaynaTALK (the protocol), headers and trailers are sent at LocalTalk speed, but the data is sent at enhanced speed.

You can use enhanced LocalTalk with any Mac. Both Dayna and TOPS offer network-adapter cards for PCs so they can communicate on a LocalTalk network at faster-than-LocalTalk speeds. TOPS already has a large installed base of PC FlashCards.

Some people might choose not to install enhanced LocalTalk on all the Macs and PCs on their network. In addition, LaserWriters (and most other LocalTalk devices, such as routers) don't support enhanced LocalTalk, because they don't have the necessary software to understand the protocols. The result is a "mixed speed" network, with some nodes talking at standard LocalTalk speed and others at enhanced speed — on the same wire.

Problems

When one LocalTalk node is transmitting and a second node begins to transmit at the same time, the first node's data gets "stomped" on. This phenomenon, known

as a collision, rarely occurs on a well-designed LocalTalk network, because before a node attempts to transmit, it always checks to see whether someone is already transmitting.

On mixed-speed networks, however, low-speed nodes have trouble detecting whether an enhanced-speed node is transmitting. A low-speed node can recognize all three parts of a standard (low-speed) LocalTalk packet as valid information. It can also recognize the headers and trailers of enhanced-speed packets. But when a low-speed node looks at the network while enhanced-speed data is going by, it sees not data but a meaningless blur. Thinking it's safe to send, the low-speed node begins transmission, stomping on the enhanced-speed packet (see "Strife in the Fast Lane" figure below). It usually takes about two seconds for such a collision to be detected — time you spend waiting.

Solutions

The two companies have different strategies for solving this problem. TOPS' suggestion is to use a repeater to isolate FlashTalk-capable nodes from standard LocalTalk nodes. Repeaters don't let data move in both directions simultaneously. If a node on the enhanced side of the repeater is transmitting and a node on the slow side tries to talk, the repeater blocks the slower signal, preventing the enhanced-speed packets from getting stomped. It's not a problem in the other direction, because the low-speed nodes can't detect the enhanced-speed traffic anyway. This is a limited strategy, however, that may not be a practical proposition for networks that cover a wide physical area.

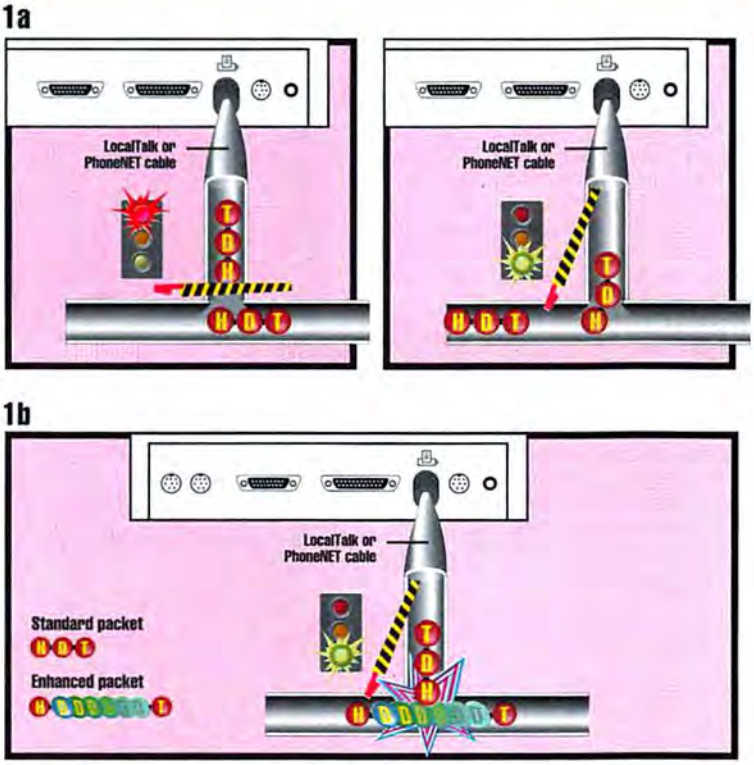
Standard LocalTalk nodes have trouble detecting enhanced-speed transmissions.

Dayna has given the collision problem more thought and offers a wider range of options. Although the repeater approach works for DaynaTALK as well, it is not the preferred solution. Dayna's first option is SpeedGuard Timing, a trick built into DaynaTALK software that enables unenhanced Mac Pluses and SEs (and some other LocalTalk devices) to realize when an enhanced-speed transmission is in progress.

There's a catch: For many LocalTalk devices, SpeedGuard Timing still doesn't prevent packet stomping. Specifically, it doesn't work with Mac SE/30, II, IIcx, or IIx computers or with LaserWriter Plus, IINT, or IINTX printers. If your enhanced-speed network contains any of these unenhanced devices, Dayna has another solution: the SpeedGuard Collision Filter (which we didn't test). This $60 box plugs into an unenhanced node in the same way a DaynaTALK adapter does, except that the filter *does* require an external power supply. The filter is also useful for routers and other network devices that are prone to stomping. It ensures that an unenhanced node won't transmit if high-speed traffic is on the wire. If you have only a few such nodes (such as a LaserWriter), SpeedGuard Filters make sense. But if more than three nodes need a SpeedGuard Filter, buying a TOPS Repeater for $189 may be a more cost-effective solution — if your network geography allows it.

Farallon's StarControllers have a unique story to tell regarding enhanced LocalTalk. A StarController can receive and transmit data at any of the enhanced LocalTalk speeds. Although it's incompatible with DaynaTalk's SpeedGuard Timing, this problem can be resolved. Because a StarController is a multiport repeater, it can serve the same isolation

Strife in the Fast Lane

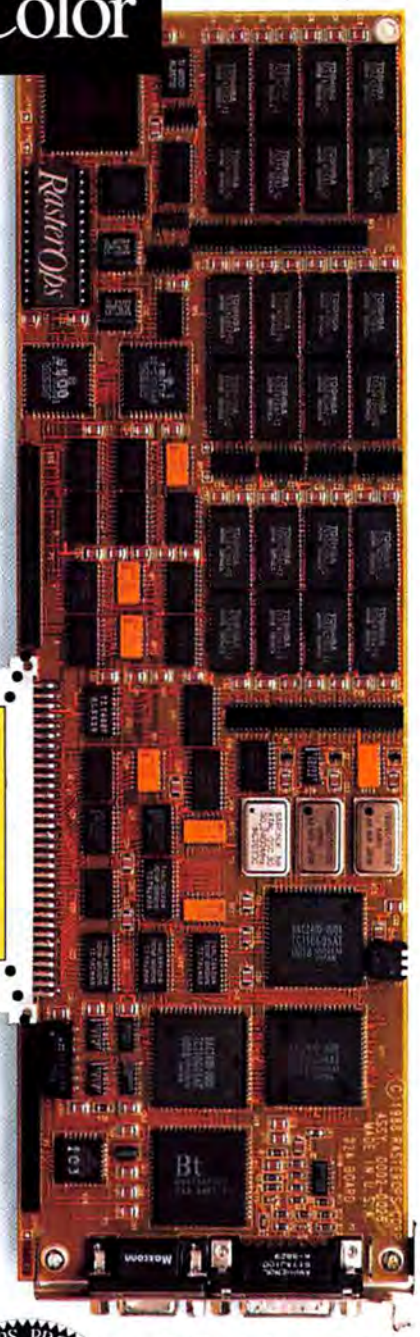


Standard LocalTalk nodes cannot detect enhanced-speed transmissions; instead they see only a meaningless blur. Thinking that the network is available, they begin to transmit data, which collides with the enhanced-speed data.

ILLUSTRATION MARK W. SWEENEY

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The best 32-bit Color QuickDraw card that you can buy: The ColorBoard 224.



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The RasterOps ColorBoard 224 is fully compatible with Apple's 32-bit Color QuickDraw. RasterOps is an Apple licensed supplier of the Apple 32-bit color QuickDraw system software.

Power Draw

Power and heat. Your board draws its power through the NuBus. Apple specifies a maximum of 2.1 Amps per slot at 5 volts. Other boards often violate the 2.1 restriction set by Apple. Amps mean heat, which is deleterious to your Macintosh, and a drain on the power supply. The RasterOps ColorBoard 224 needs less than 1.9 Amps. Your system runs cooler. You can use other slots without fear of overloading your power supply.

Set Gamma and DirectSetEntries

Your ColorBoard 224 directly supports Apple's DirectSetEntries and SetGamma QuickDraw instructions in hardware. Instantly see the effect of changes to your color image. You can watch the color tones change as you move the mouse. Without this dynamic support, you have to guess at the color correction, enter the new value, and wait for the new screen to repaint. No waiting with the 224.

The RasterOps ColorBoard 224 is more than the industry's outstanding 24-bit board. It also lets you expand into advanced desktop video applications. The on board connectors let you attach our SFX video board, that delivers the features of a multimedia studio on a single card. Only RasterOps.

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Utilizing the advanced circuitry of the 224 Chip Set, the board is capable of instantaneous hardware pan and zoom. This function takes no CPU time or processor RAM and allows users to zoom in 2x and 4x while in any application in the blink of an eye. The panning rate is user-selectable and is initiated automatically when your mouse nears the edge of the screen. No more waiting for the screen to redraw to see the details of your work.

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Three separate oscillators. One for use at a resolution of 1024 x768 with the RasterOps 19" color Trinitron monitor. The second oscillator for use at a resolution of 800 x 600 with the RasterOps 16" color Trinitron Monitor. And a third for use with Apple's 13" color monitor at a resolution of 640 x 480 pixels.

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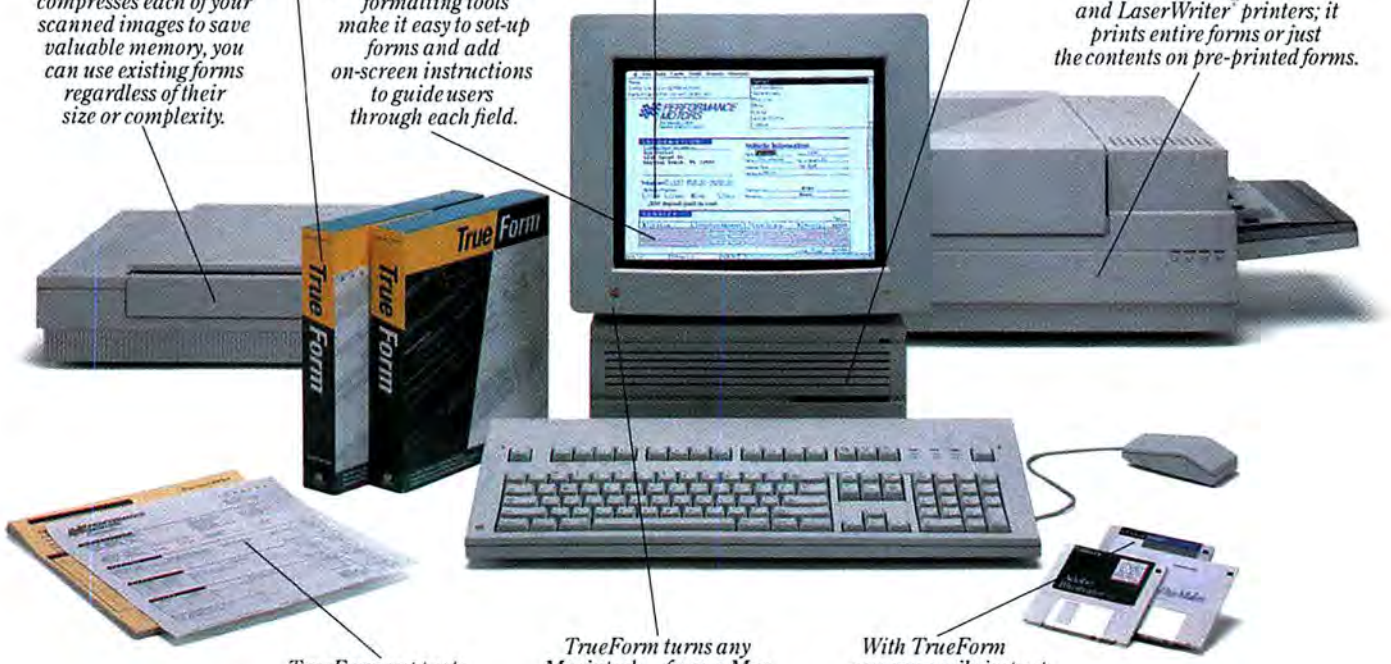
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function as a TOPS Repeater. By attaching *only* standard LocalTalk *or* enhanced LocalTalk devices to a single StarController port, you can virtually eliminate stomping without SpeedGuard Timing.

Can We Talk?

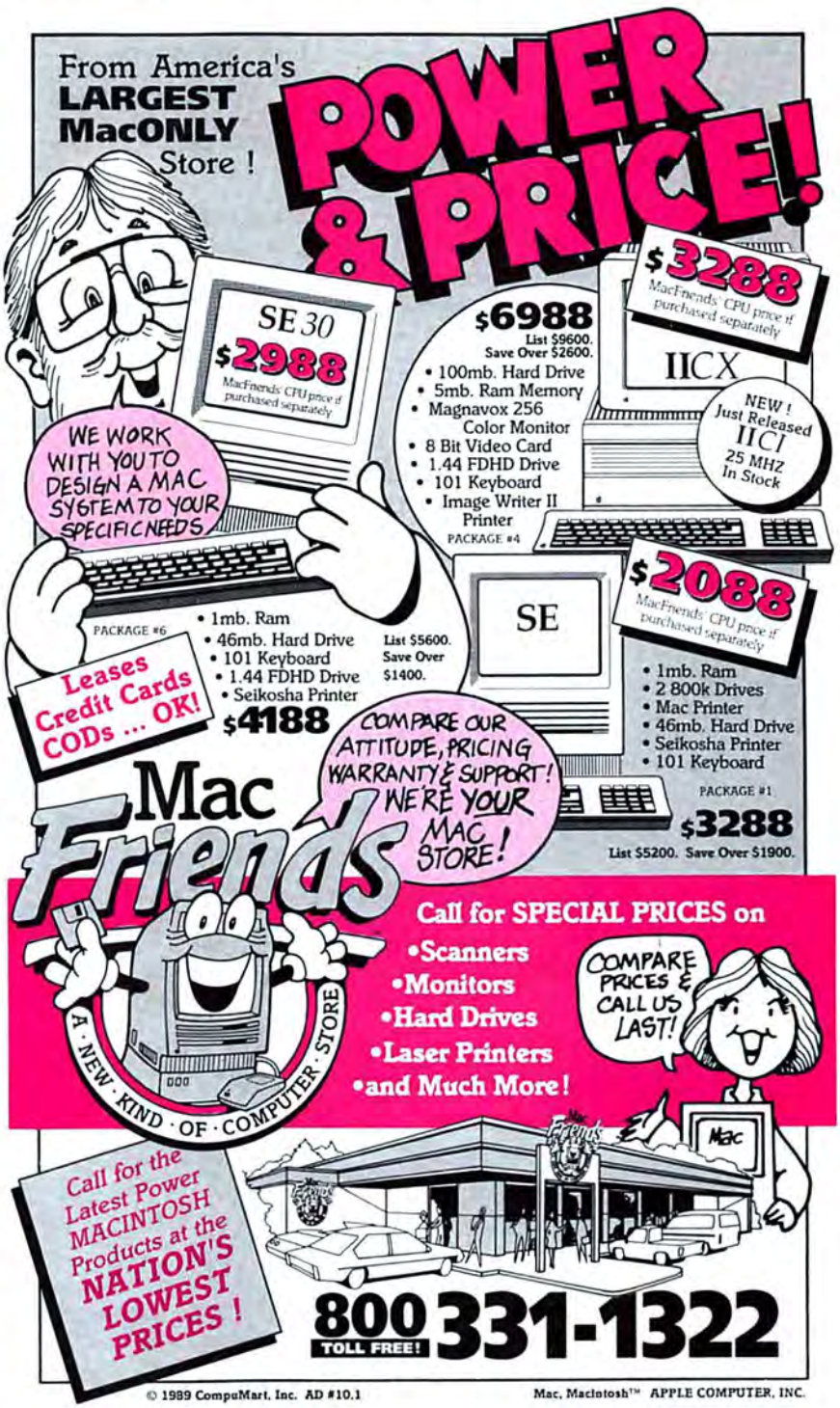
For third-party vendors of LocalTalk devices, these problems raise the question of which of these protocols to support, if any. Infosphere's Liaison 2.0 supports FlashTalk but not DaynaTALK. According to Apple, the AppleTalk Internet Router (not yet shipping at press time) theoretically will support both, but there will be no custom code to ensure that it does. And neither protocol is supported by any of the currently available LocalTalk-to-LocalTalk or LocalTalk-to-Ethernet hardware routers. Third-party vendors we've talked to have consistently said that they would support whichever enhanced-LocalTalk protocol achieves a suitable market share.

For medium-to-large networks, enhanced LocalTalk can make networking much more pleasant.

A similar issue faces vendors of network-management software. For example, although the StarController supports enhanced LocalTalk transmissions, Farallon's TrafficWatch utility cannot interpret their contents and so cannot accurately report on network use in an enhanced-LocalTalk or mixed network.

How Fast Is Fast?

We tested the two enhanced-LocalTalk products in *MacUser*'s NetWorkShop and compared their performance with that of standard LocalTalk and Ethernet (see "Packets on Parade" sidebar). Both DaynaTALK and FlashBox came out well ahead of LocalTalk, although they did not achieve the 3-to-1 advantage that you might expect from their rated speeds. The throughput difference became more marked as the number of nodes increased. With 2 nodes, FlashBox had 1.46 times the throughput of LocalTalk; with 14 nodes, the factor was 1.79. With 2 nodes, DaynaTALK performed 1.6 times as well as standard LocalTalk and with 14 nodes, 2.49 times as well. Ethernet achieved 1.83 times the LocalTalk throughput with 2 nodes and a whopping 3.76 times the throughput with 14 nodes.



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Note that the throughput we achieved in our tests doesn't necessarily reflect what you should expect after installing enhanced LocalTalk. If it's your *network* that is bogged down and not your *server*, applications such as E-mail and file transfers to and from the server should improve. But printing won't unless you're spooling over the network.

Is It for You?

Our testing was done under heavy load conditions. If your network is small (six nodes or fewer) and each user transmits only a small amount of data at a time (for example, a short E-mail message), enhanced LocalTalk won't do much for you. You won't notice whether a transaction takes one millisecond or a third of a millisecond. But you *will* notice the difference with large files of half a megabyte or more — such as page-layout documents, sounds, gray-scale scans, 32-bit color images, and other graphics files.

But the time you spend waiting when your network gets heavily loaded is due not only to the size of files being transferred, but also to the size of your network. Notice that as network size grows, enhanced-LocalTalk performance degrades more slowly than that of LocalTalk (see the figure in the "Packets on Parade" sidebar). The ability to put more nodes onto a network without suffering a reduction in performance from the increased traffic is a far more significant benefit to many users than the speed increases that can be achieved for individual file transfers. Using Ethernet allows the creation of even larger networks without performance degradation.

For a growing network, enhanced LocalTalk is not — and will never be — a replacement for Ethernet.

Many people wish they could speed up their networks to reduce printing delays. But even if you could equip a LaserWriter with enhanced LocalTalk — which you can't — it wouldn't make much difference. Most of the time you spend waiting to print a document is the printer's fault, not the network's. If you want to regain control of your Mac more quickly when you print, set up a spooler such as the AppleShare Print Server. That alone will substantially cut the time you spend waiting to print, because you'll now be waiting only for the network, not for the printer. Enhanced LocalTalk may decrease this wait even further, if you equip the spooler Mac along with users' Macs.

There are other considerations too. The manuals for both products tell you that unterminated wiring and heavy traffic

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Liaison—recipient of the 1989 Eddy for Best New Networking Product and the only five mouse network product review, "Robust security... Works every time... A brilliant piece of programming... Look to Liaison first." MacUser, April 1989

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April / May 1990 • Volume 3, Issue 2

Using Desktop Publishing to Communicate Image

By Harold W. Morrison

Each paper that leaves your office builds image. A decade ago image was a matter of accuracy, primarily typing accuracy. Before sending a letter, you proofed it for spelling. You chose heavy bond paper. You changed the ribbon often and kept the typewriter keys clean. This was enough to maintain a good image on paper. Enter desktop publishing. Now image is a matter of design as well as accuracy.

Remember the studies that say we decide in the first twenty or thirty seconds whether we like or don't like a person? We're doing the same thing with every paper that comes across our desk! We're deciding to do business or not to do business by the visual impression we get from a letter or flier or report. And that phenomenon will grow as desktop publishing grows.

Now you don't simply type a proposal, you design a proposal. And if you don't design it, yours will be right along side one that is designed.

Substance should never be replaced by something that merely looks nice. Facts are facts no matter what size type you use or whether your type style is bold or italic.

But if someone gives me two reports and one is text-heavy, with very little white space on the page, and the other is well-designed, easy to read, I'll be drawn to the well-designed page.

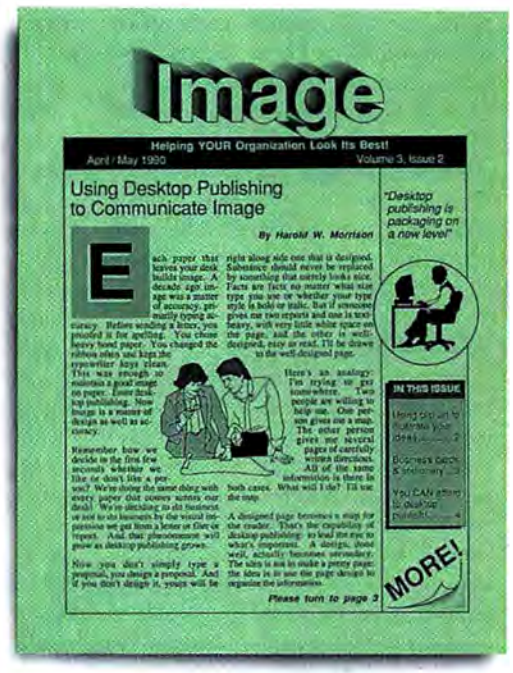
Here's an analogy: I'm trying to get somewhere. Two people are willing to help me. One person gives me a map. The other person gives me three pages of carefully written directions. All of the information is there in either case. What will I do? I'll use the map.

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You CAN afford to desktop publish! Page 4

Your word processor alone.

Soon After.



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across routers (often signs of a poorly designed network) can severely degrade their performance. Remember also that if you enhance a Mac Plus or SE, you'll get less benefit than if you enhance one of the faster Macs, simply because the 68000 CPU takes longer to process the network protocols than does a 68020 or 68030. While this usually affects only a single user, Macs used as servers affect the performance of every machine that communicates with them.

Conclusion

For many medium-to-large networks, enhanced LocalTalk can make networking a great deal more pleasant. It also makes a big difference for small but heavily loaded networks. But, as always, you must analyze your network needs carefully before buying. Many things can cause a network to "feel" slow. Your problem might be solved by a couple of 25¢ terminating resistors. Or it may be that you need to upgrade your file server from a Plus to a IIcx. Installing enhanced LocalTalk won't necessarily help if your problem lies elsewhere.

Another caution: Although our tests show that enhanced-LocalTalk performance is close to Ethernet's in some cases, it is not — and will never be — an Ethernet replacement. If your network will continue to grow, either in nodes or in traffic, Ethernet is a better long-term solution. If you buy FlashBox or DaynaTALK now and find that in a year you have outgrown it, you will have wasted $189 for every node you enhanced. Furthermore, Apple is committed to supporting Ethernet, but it has no such commitment to enhanced LocalTalk.

Still, for those who've decided that enhanced LocalTalk is what you need and you're wondering which one to buy, DaynaTALK is our overall favorite. Because both products cost $189, features are the deciding factor. You'll have to decide for yourself how important these features are. As we see it, DaynaTALK's higher data-transfer rate, SpeedGuard Timing, and SpeedGuard Collision Filter — and the fact that it doesn't need an external power supply — make it the superior product.

Stephan Somogyi is *MacUser*'s NetWorkShop coordinator. He wishes fervently that he could run Timbuktu between his brain and his Mac via enhanced LocalTalk.

Packets on Parade

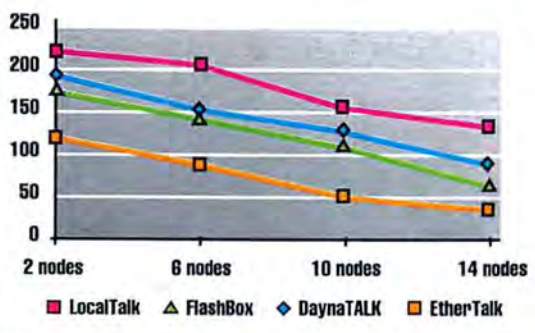
To compare the throughput of LocalTalk, FlashBox, DaynaTALK, and Ethernet, we needed a way of generating controlled quantities of network traffic. Apple's Responder INIT and Inter•Poll diagnostic software provided us with the necessary tools. The Responder INIT installs the AppleTalk Echo Protocol (AEP). AEP works very simply: When one node sends a request packet to another, the receiving node echoes the packet back to the originator.

We set up pairs of machines — one machine in each pair running Inter•Poll, the other with the Finder sitting in the foreground and Responder running in the background. We had the Inter•Poll node send 17,925 packets (just over 10 megabytes of data) to its companion Responder node, which sent it back. This meant a total of 20 megabytes of data per pair of machines was being sent over the network. Our testing setup used one, three, five, and seven pairs. We used a mix of Mac SE/30, II, IIx, IIcx, SE, and Plus computers, with the faster ones running Inter•Poll.

With multiple pairs transmitting simultaneously, the network was loaded much more heavily and for much longer than it would be under normal use. Furthermore, our tests isolated performance problems that were due to the network. On many networks, a server's CPU or hard disk is the real bottleneck.

Use these results only as a guide.

Throughput in kilobits/sec



LocalTalk's performance degraded 71 percent when the size of our test network increased from 2 to 14 nodes. By comparison, FlashBox degraded 64 percent and DaynaTALK 54 percent. Ethernet suffered only a 40-percent reduction in performance.

Get Info



DaynaTALK

A low-cost alternative to Ethernet for crowded LocalTalk networks. **Pros:** Requires no external power. Well-thought-out solutions offered for mixed-network–collision problems. Higher data-transfer rate than FlashBox. **Cons:** Doesn't conform to Apple-endorsed standards.
List Price: $189 per node
Version: 1.0
Requires: Mac Plus
Vendor: Dayna Communications, Inc., 50 S. Main St., Salt Lake City, UT 84144; (801) 531-0600.



FlashBox

The first enhanced-LocalTalk implementation, with a large installed base on PCs. **Pros:** Supported by more third-party products than DaynaTALK. **Cons:** Requires external power supply. Limited solutions for collision avoidance.
List Price: $189 per node
Version: 1.0002
Requires: Mac with DIN-8 printer port; DB-9 version for Mac 512KE should be available soon.
Vendor: Sun Microsystems, TOPS Division, 950 Marina Village Parkway, Alameda, CA 94501; (415) 769-9669.

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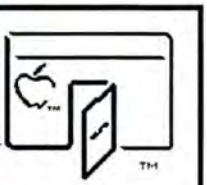
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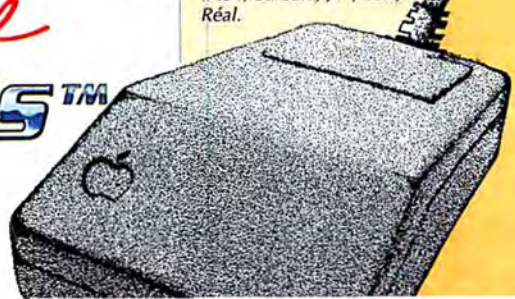
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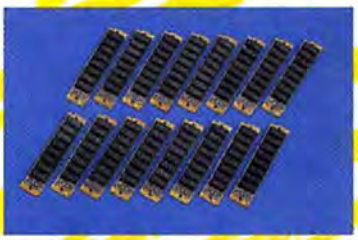
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MacUser Marketing CONFERENCE

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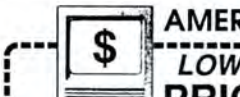
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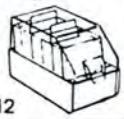
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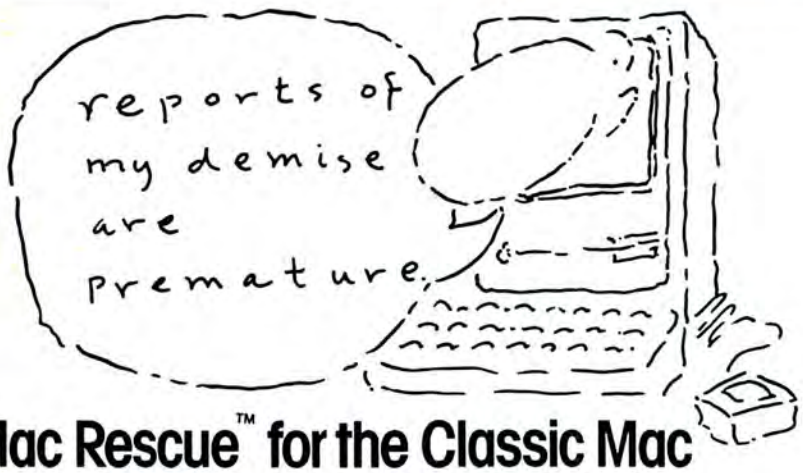
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MEMORY UPGRADES
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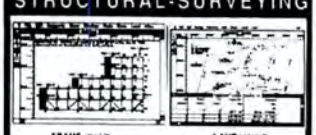
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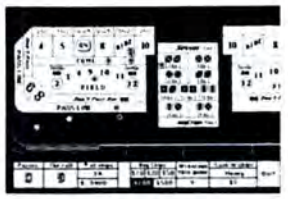
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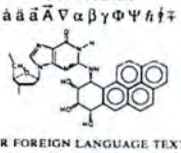
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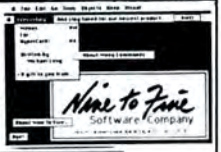
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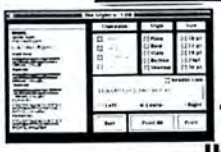
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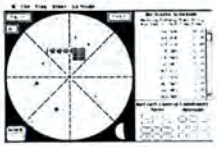
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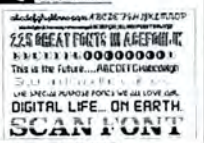
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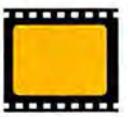
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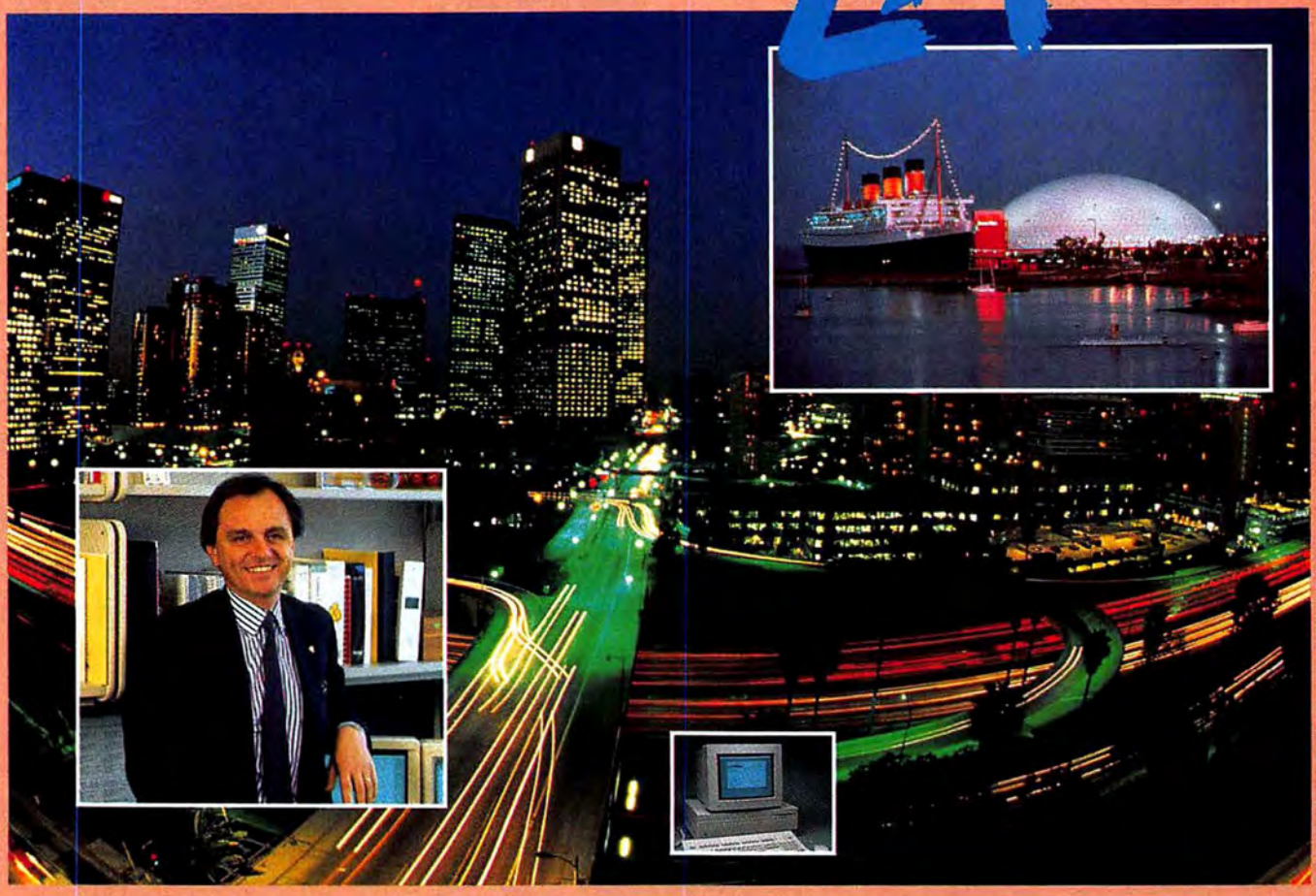
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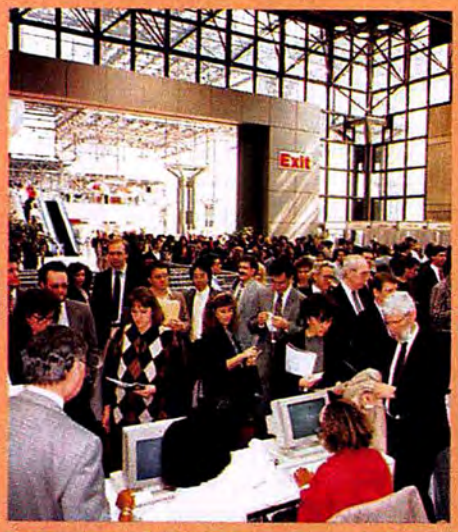
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Bobker's Dozen

Good Things and Small Packages

This section's premise is to alert you to excellent or promising products that you might otherwise overlook in the increasingly populous Mac marketplace. Essentially, I'm sharing with you a slightly retouched snapshot of a set of notes I keep. The list changes nearly every day, and right before *MacUser*'s monthly deadline, I gather the requisite number of products into a new document, clean up the language and recheck the products and product data, compress it with StuffIt, and send it by modem to *MacUser*'s editorial offices. Given how this report is assembled, it's fitting that the best small product I've seen in the past 30 days is a rather special screen-capture utility. As I've said before, I love software that's genuinely useful, and software that helps me get my own work done more easily is the best of all. So let's start with a little gem called SnapJot.

WRITE TO

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Do you have a good thing in a small package? If you'd like to have it considered for review here, send it to the address above.

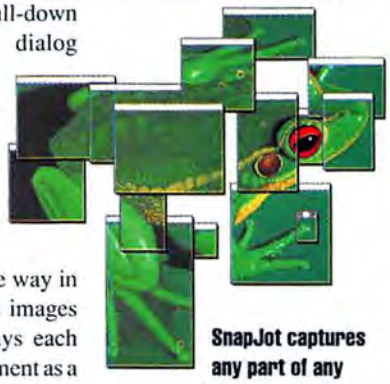
BY STEVEN BOBKER

1 SnapJot ★★★★★

SnapJot makes Apple's Command-Shift-3 Fkey look like a paltry effort. It even does more than Mainstay's excellent Capture (indeed, I use both programs).

SnapJot can capture anything, including pull-down menus and modal dialog boxes. You can capture whole screens, even on two-page displays, or as little of a screen as you need. The feature that makes SnapJot really stand out is the way in which it handles the images it captures. It displays each screen or screen fragment as a separate window. You can capture a line or two of text and move it off to the side for comparison with text elsewhere in the document or in another document. If you use MultiFinder, the captured image windows reside in the DA layer and can be seen from within any open application.

The SnapJot DA lets you print the active SnapJot window, save it to either a MacPaint-format file or a PICT document, and set the activation-key sequence.



SnapJot captures any part of any screen in freeform windows. Dissecting frogs was never so painless.

The one addition I'd like to see is the ability to save a window automatically as it's created. With the current setup, you must remember to save each window you want to keep. (For a look at several other screen-capture utilities, see this month's DTP section.)

Version 2.0. Requires System 4.1 or later. $36. Trillium Software, 21W171 Coronet Road, Lombard, IL 60148; (312) 916-9360.

2 MacBarCoda ★★★½



If you offer anything for retail sale in this country, from a magazine to a can of peaches, you probably put something called the Universal Product Code (UPC) on it. Producing reproduction-quality bar codes is expensive — $10 to $15 a shot being typical — and while producing the necessary codes would seem straightforward, until now I haven't seen a Mac program that can do the work.

MacBarCoda is a British program that can save a lot more than its $990 price for users who need its abilities. It easily and elegantly produces a wide variety of bar codes in EPSF format. You can create codes in any of six standard bar-code formats, and you can place the output in an illustration or page-layout program and print it at full LaserWriter or Linotronic resolution.

Requires 1 megabyte of RAM and a hard-disk drive. $990. ComputaLabel, 18A Regent St., Narborough, Leicester LE9 5DJ, England; 011-44-533-750131 (from the U. S. and Canada).

3 Forecaster ★★★★½

Forecaster is Palo Alto Software's latest useful business-oriented product. Open Forecaster; sketch or draw a curve; press a key combination; and the curve is translated into numeric values, which are placed in the Clipboard or in a text file for transfer to a spreadsheet. It's most effective when you use it under MultiFinder.

If you don't like the curve, simply change and regenerate the values. There's no involved work with formulas, and the only numbers you see are the final output. Forecaster is smart enough to round the numbers it generates to a user-specified accuracy.

The program is incredibly simple to use. It does just what it claims to do and does it superbly. All you need to create in Forecaster is the curve — which can be as curvy as you like — and the program will generate all the required values.

Version 1.0. Requires 1 megabyte. $69.95. Palo Alto Software, 260 Sheridan Ave., #219, Palo Alto, CA 94306; (415) 325-3190.

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4 MacEnvelope ★★★★½



MacEnvelope is precisely what its name implies — an envelope-printing application. It's one of the best, if not the best, of its kind. It handles all shapes of envelopes and all sizes of labels. It can automatically add the bar coding that the post office and large-scale mailers put on many envelopes. If you are using an ImageWriter II with a color ribbon, you can print addresses in color. You can place graphics next to the return address, and you can put user-specified messages in the lower-left corner.

You can enter addresses directly and create lists with the simple list manager in the program. Address data can also be imported from most Mac databases. You don't get full mail-merge capability, but you can create many different envelopes or labels in one run.

Although MacEnvelope is fine for personal use (it's now doing most of my envelopes), it really comes into its own when used by small businesses and organizations such as schools and church groups. For them, this well-behaved and little (113K) program is a real bargain.

Version 4.1. Requires 512KE. $89.95. Synex, 692 Tenth St., Brooklyn, NY 11215; (718) 499-6293.

5 HFS Backup ★★★★

HFS Backup isn't new to these pages, but the latest version (3.0) is significantly different from previous ones.

HFS Backup now has the most complete feature set that I've seen in any backup program, with everything from a virus checker to partial imaging capabilities. The only thing it can't do is back up to removable-cartridge drives.

Not only is HFS Backup powerful — and noticeably faster than its competitor Redux — but it also works with 512KEs as well as with all later machines. This is definitely a top-class backup program.

Version 3.0. $99. Personal Computer Peripherals Corp. (PCPC), 4710 Eisenhower Blvd., Building A4, Tampa, FL 33634; (800) 622-2888 or (813) 884-3092.

6 Formulator ★★★★½

Formulator ups the ante in math-formula setters. This field is tough, with such stellar performers as Expressionist and MathType, but Formulator holds its own. It's an application only (unlike Expressionist, which is primarily a desk accessory) and thus works best under MultiFinder. You can control output more finely than with any similar program, although some of the controls are less than perfect.

Formulator's output files work well in all graphics programs and word processors. In addition to producing the expected Greek letters, formulaic symbols, and other basics of mathematical formulas, Formulator can create matrices and chemical formulas. If this were a DA or came in a DA version, Formulator would be the best of its kind. As it is, and especially if you use MultiFinder, it's worth a look.

Version 1.1. $149.95. ICOM Simulations, 648 S. Wheeling Road, Wheeling, IL 60090; (312) 520-4440.

7 Fast Formatter ★★★★½

Fast Formatter is this month's public-domain–program pick. It's included free on the MenuFonts 2 disk and is also available from *all* user groups, bulletin boards, and electronic services.

Fast Formatter has one function: formatting blank disks rapidly and efficiently. It does the job faster than the Finder can. It can format disks as either single-sided (400K) or double-sided (800K). However, this version can't handle the new FDHDs that can be used by the IIx, IIcx, and SE/30.

Version 3.0. Free. Beyond, Inc., P.O. Box 31990, Tucson, AZ 85751; (602) 280-8790.

8 MenuFonts 2 ★★★½

MenuFonts 2 is a simple INIT that shows the entries in programs' Font menus in their actual typefaces. Earlier versions were slow and less than perfect. Version 2.02 is much faster and gave me no trouble at all.

If all MenuFonts 2 could do were show the real fonts in the Font menu, it wouldn't be worth mentioning, since Suitcase II can do that and a lot more. However, MenuFonts 2 has other features that make it a worthwhile addition to the System Folder, even for Suitcase II users. It lets you decide which menus (by menu name) it will work on, what size the fonts display will be (9 to 24 points), and which programs it should ignore. For me the nicest additional feature of MenuFonts 2 is Key Scroll, which lets you select fonts by typing the first letter of the font name.

Version 2.02. Requires System 4.1 or later. $49.95. Beyond, Inc., P.O. Box 31990, Tucson, AZ 85751; (602) 280-8790.



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9 The Abbreviator ½

The Abbreviator is a brilliantly conceived program that, unfortunately, teases users and fails to deliver on its promise. It's mentioned here, despite its low rating, because it's one of the best ideas I've seen in a long time, and I hope that this negative exposure (and your mail) will encourage the programmer to fix it.

In an attempt to make data entry easy and fast, The Abbreviator monitors your typing and notes and "learns" long words. You can then enter these words by typing any part of them along with a simple code. The program can learn user-specified phrases as well.

When the program works, it's amazing; unfortunately, this first version just doesn't work reliably enough. After experiencing numerous failures and freezes, I gave up. There's tremendous potential here, and I'll be sure to check out the next version.

Requires System 4.1 or later. $75. BaySoft, 15578 Century Lake Drive, Chesterfield, MO 63017; (800) 333-7444 or (314) 537-2007.

10 MacPhonebook ★★★½

MacPhonebook is a very nice address manager and printer, although not as ambitious as DynoDex, which I described last month. Its best feature is its ability to print address books — in three sizes. The books are correctly paginated so that you simply fold the pages together and staple them at the center. The program can handle up to 1,600 names and addresses, with three phone numbers to an entry.

MacPhonebook's greatest weakness is that it has a limited sorting ability — it can sort only by using the first letters in the Name field. So if you need to sort by last name, the last name must be first in the data. Not all the information you'll want to import will be in that format, and this requirement seriously limits the program's ability to import files delimited by tabs or carriage returns.

Address books can be in directory size (8.5 x 11 inches), pocketbook size (5.5 x 8.5 inches), or Little Black Book size (2.75 x 4.25 inches). Two sturdy black covers are provided for your Little Black Books. This program is excellent for people who must constantly update their phone books.

[*As we went to press, Synex expected to release MacPhonebook 2.0, which will feature improved sorting and greatly expanded import capabilities — Ed.*]

Version 1.0. Requires 512K. $39.95. Synex, 692 Tenth St., Brooklyn, NY 11215; (718) 499-6293.

11 Bulk Mailer+ ★★★½

BulkMailer+ is the middle offering in Satori's well-established range of mailing-list programs. It can handle up to 32,000 names and addresses.

The program offers many sorting and printing options. Setting up some of the reports requires using a rather arcane set of symbols and isn't very easy.

Still, the program is fast and does the job — most of the time. I had consistent problems under MultiFinder and would recommend that you not use BulkMailer+ under MultiFinder. Also, the program is picky when importing data and skips records that don't meet its high standards. This fussiness would be OK, except that it doesn't let you know which records it has skipped or even that it has skipped any. Still, the good in this program far outweighs the bad, and it should satisfy most users who do bulk mailing.

Version 3.23. Requires 1 megabyte of RAM. $350. Satori Software, 2815 Second Ave., Suite 560, Seattle, WA 98121; (206) 443-0765.

12 Tablecloth ★★★



Tablecloth is a small INIT with only one major feature, and it works with one and only one version of MultiFinder (6.0.1, the version that ships with System update 6.0). That restriction would seem to disqualify it for this column. However, it has proven so useful and does its work so unobtrusively that it's earned a place here.

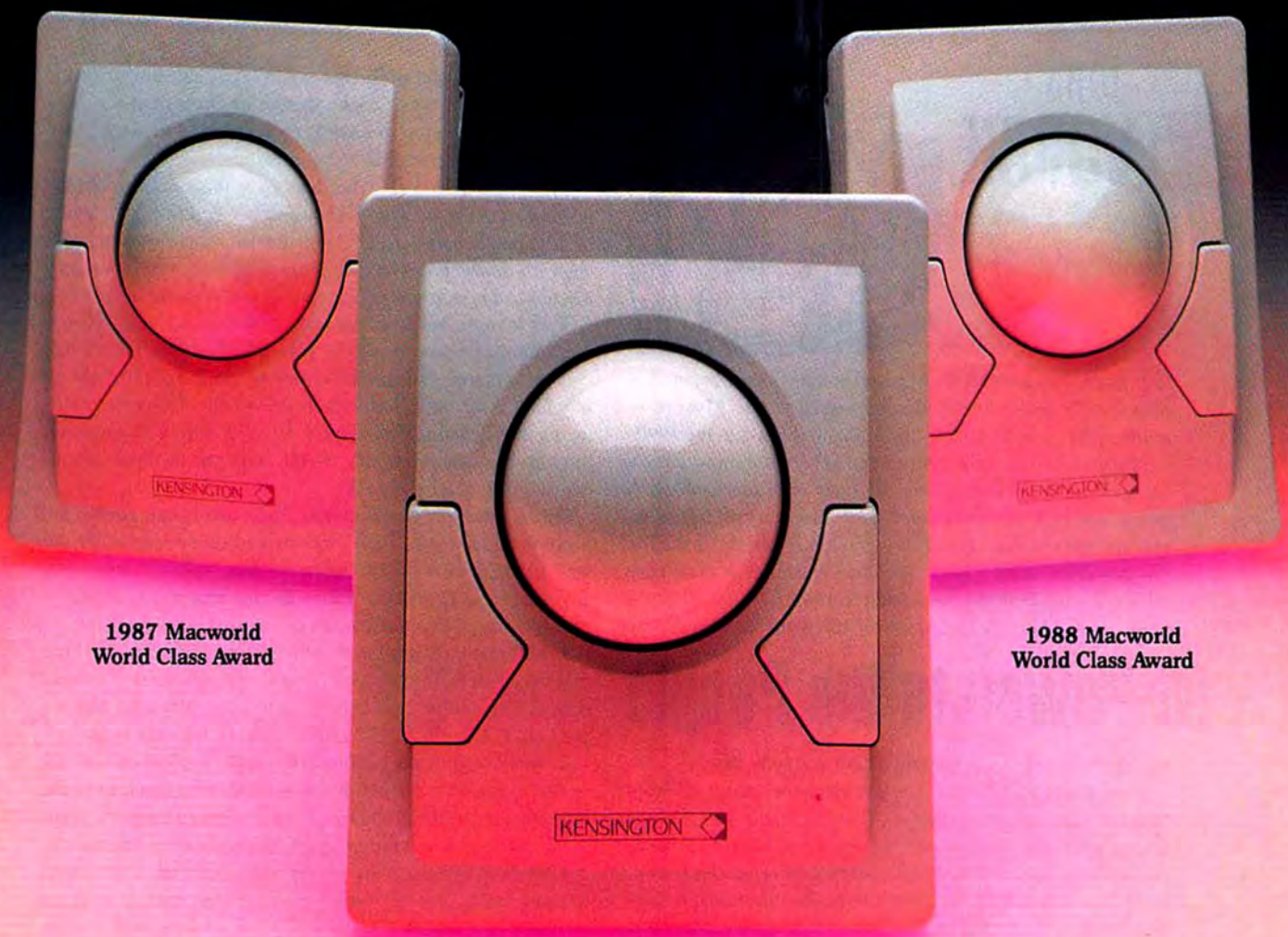
Tablecloth removes, or temporarily covers, all inactive windows in a MultiFinder environment. You tell it to do so by triple-clicking on the active window. Tablecloth also has a screen saver (with password locking!) and other features that make using MultiFinder less confusing and far more pleasant.

Version 1.0. Requires System 6.0 or later and MultiFinder 6.0.1. Introductory price, $29.95; regular price, $49.95. User-Tek, 4444 E. 66th St., Suite C, Tulsa, OK 74136; (918) 494-0339.

13 RésumExpert ★★★★

RésumExpert is a set of 30 Word 3-family templates for résumés. The templates are generally of the highest quality, but the real reason to get RésumExpert is the excellent manual. The technical information in the manual is a bit dated, with many references to Word 1.05, but what it lacks on the technical side it more than makes up for in résumé-creation advice and instruction.

Requires 512KE. $49 (versions for Word 1.05 and Works 2.0 are also available at the same price). A Lasting Impression, 49 Thornberry Road, Winchester, MA 01890; (617) 721-2037.



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JOHN C.
DVORAK



M-Power to the People

I think if we are ever to see grand hokum in the Mac marketplace, we'll see it in the months ahead, as the M-word — multimedia — becomes the "in" thing to discuss in the 1990s.

Multimedia used to be defined as a fancy slide show that you sat and watched. These were the ones with the bank of 40 computer-controlled projectors — popular at world's fairs and at amusement parks. I remember a multimedia show in the Iran pavilion at the world's fair in Spokane, Washington, in the early 1970s. It was about the Shah and the glories of the country. It seems that while the definition of the word *multimedia* has changed over time, the baloney factor certainly hasn't.

Nowadays, *multimedia* means a computer using different "media" such as a laser disc, a CD-ROM, cable TV, and who knows what else. The most-talked-about end use is as a grandiose teaching machine. You remember teaching machines, don't you? This was one of the biggest flops in educational history. Not that they didn't work; it just seems that teaching machines have no charisma or charm. I remember back when I was a college student. One summer I went to Cal State Hayward and discovered that the school had a basement lab with about a dozen expensive teaching machines. You could sign up for a bunch of courses, which you could take at your own pace. The machine tested, paced, and graduated you. For the life of me, I can't remember what courses I took — it was so boring. Soon thereafter the famed Plato computerized teaching system was marketed by Control Data. This was the be-all, end-all teaching machine. I haven't heard about it for years.

The hot, hot multimedia system out there right now was developed by Robert Abel, the noted Hollywood middleman and go-getter *extraordinaire*. Abel has put together a demonstration system called Guernica, which is a multimedia approach to learning about the famed Picasso painting of the same name that depicts the Nazi destruction of a peaceful Basque village by air attack during the romantic Spanish Civil War. Based mostly on using a laser-disc player controlled by a Mac II, the system allows a user to "explore" (as the developers like to say) the painting and its history.

Fronted by a HyperCard-like interface (SuperCard, actually), the system lets users click and move from point to point on the painting and get lectures and comments from old bores, ex-mistresses, "people who were there," dopey ex-Nazi pilots, Picasso mavens, and all sorts of experts. You can jump from the history of the town to a backgrounder on Spanish dance. You can jump from that to something else. The system is supposed to exemplify the potential of multimedia.

Bob Abel and his pals, when they show this system, make the mistake of using the word *empower* when describing the value of this approach to learning. With me that rings a warning bell, since it's one of those New Age buzzwords that always portends a screwball notion such as crystals or out-of-body travel.

This system, he says, "empowers the individual." This is presumably because it allows you to explore the knowledge contained therein. The promoters tell us that it's not like a book in which someone is telling you something. This new multimedia thingamajig allows you to discover things on your own through the wondrous use of the hypermedia approach to education. Linearity is dead.

By the time the demo was over, I was nearly nauseous at the presumptuousness of these notions and despondent over the lack of skepticism in the room. In fact, nobody anywhere, anyplace — as far as I can tell — has questioned any aspect of this nonsense. Let's make some quick, necessary points:

1. Multimedia education is nothing more than a new teaching machine with real-time video. Teaching machines don't work, period. This multimedia concept is to education what a demo program is to software. Teachers teach. Computers compute.

2. With multimedia, people do not really explore and are not (ugh) empowered. The information provided on such a system is predistilled by the producers. It's not a base of knowledge but a subset that can be easily manipulated. Abel, for example, is obviously a Democrat, as he slipped more than a few anti-Reagan barbs into his presentation. Video media, with its powerful images used interactively for teaching will find its niche as a propaganda tool. I get a bad feeling when I see this thing in action.

3. Multimedia is, simply put, a fancy sham. It's promoted by the natural-born hucksters within Apple because it has all the earmarks of something trendy and fashionable. It keeps people talking. It keeps the excitement level high. It generates interest in Apple, and it sells hardware.

I'm not going to say that some of these projects, such as Guernica, won't be fun to play around with, assuming you can afford to buy all the necessary (expensive) hardware to add to your already expensive system. Institutions, of course, will be the suckers conned into spending the big dough for all this equipment. It will all end up in those grim AV departments, where it will eventually be auctioned off for pennies on the dollar during a cost-saving period. I guess we can all appreciate buying a good, cheap, used videodisc player when that happens. And for those who want to learn about Picasso: Try the library or go to a museum.



BY JOHN C. DVORAK

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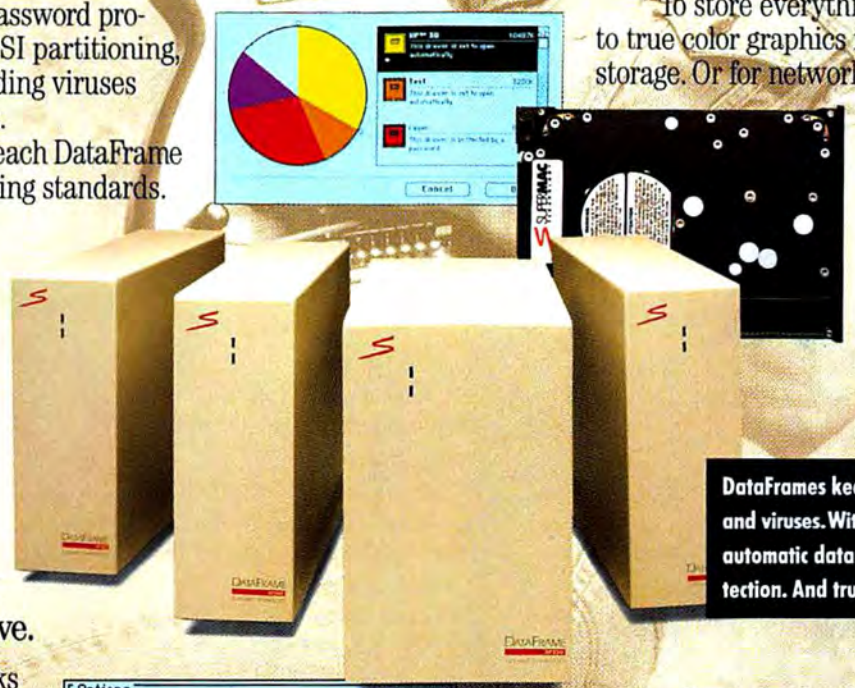
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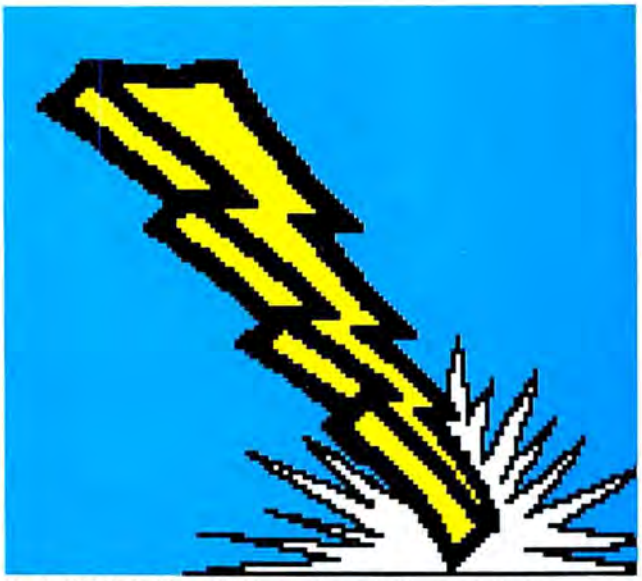
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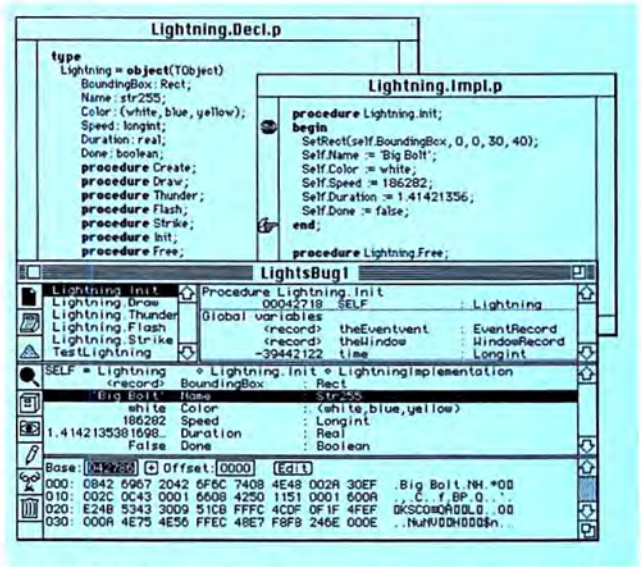
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